

# Pye 'Pocketfone' Personal Radiotelephone



## FEATURES

- New battery economy circuit
- Extremely light-weight and compact
- Reception free from noise and interference
- Minimum of controls
- Transmit button automatically extends antenna
- Hearing aid socket
- Easily accessible batteries
- Wide range of accessories available



## TYPES PF 1 & PF 12e

The Pye 'Pocketfone' is a miniature u.h.f. radiotelephone for personal use. It is ideal for communications between a control centre and individuals in towns and other built-up areas, and is particularly suitable for use by the police, fire services and security forces.

The 'Pocketfone' has an RF output of 150 mW. Very high quality two-way communication can be achieved at a range of 2 – 5 miles (3 – 8 km) depending on the type of installation. The penetration inside buildings and in heavily screened areas is most impressive.

A special intrinsically safe version, type PF1 2e, is available for use in flammable atmospheres. This equipment, which has BASEEFA certification by the UK Dept. of Trade and Industry, provides an RF output of 120 mW.



The all-transistor receiver and transmitter are two separate small units which fit easily into the pocket. Each unit has its own power supply and all external connections are eliminated. The receiver operates from inside the breast pocket and is fitted with a retaining clip for this purpose. Complete with 9V battery its weight is less than 9½ oz (275 gm). The transmitter, which weighs only 9.4 oz (266 gm) with its 18V battery, is normally carried in the side pocket.

The equipment operates on one of two bands in the u.h.f. range 425–470 MHz at which frequencies the antenna length is short; in fact in the receiver it is built into the case and the transmitter has a retractable 6-inch (15.2 cm) antenna which automatically extends when the 'press-to-talk' button is operated. There is also virtually complete freedom from noise and interference at these frequencies.

A new battery economy circuit ensures a battery life several times that of a more conventional receiver. Transmitter and receiver are powered by nickel-cadmium batteries which can be recharged without their removal.

The range of accessories available includes earpiece and fittings, carrying aids and battery chargers. For full details see separate leaflet.



## Specification

### Types PF1 & PF1 2e

GENERAL		
	Service	Two-frequency simplex; frequency modulation
	Frequency Bands	Band T4 425–440 MHz ( <i>type PF1 only</i> ) Band UO 440–470 MHz
	Channel Spacing	25 kHz or 50 kHz
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TRANSMITTER (Types PF1 T, PF1 T2e)	R.F. Output	Type PF1T: 150 mW Type PF1T 2e: 120 mW (minimum)
	Modulation	Peak deviation 15 kHz
	Antenna	6 in. (15.2 cm) retractable antenna, automatically extended by operation of 'press-to-talk' switch
	Power Supply	One 18V nickel-cadmium battery
	Control	'Press-to-talk' switch
	Dimensions	6⅙ in. × 2⅝ in. × 1⅛ in. (15.4 × 5.9 × 2.9 cm)
	Weight	6 oz (170 gm) less battery 9.4 oz (266 gm) fitted with battery
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RECEIVER (Types PF1 R, PF1 R2e)	Sensitivity	1.0 µV (p.d.) for 20 db quieting
	A.F. Output	100 mW
	Antenna	Concealed dipole
	Power Supply	One 9V nickel-cadmium battery
	Control	On/Off and Volume
	Squelch	Preset
	Dimensions	6⅜ in. × 2⅝ in. × 1⅛ in. (16.2 × 5.9 × 2.9 cm)
	Weight	8 oz (227 gm) less battery 9.7 oz (275 gm) fitted with battery

*Pye policy is one of continuous improvement; therefore the right is reserved to change specifications without notice.*

NOTE: not all frequency bands, options, etc. are available for every market area.

### PYE TELECOMMUNICATIONS LTD.

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Cables: PYETELCOM CAMBRIDGE



# Information Sheet

## 'Pyecall' Personal Radiotelephone with Selective Calling



A special intrinsically safe version, type PF1SC2e, with BASEEFA certification is available for use in inflammable atmospheres. The equipment comprises transmitter type PF1T2e and receiver type PF1RSC2e. The transmitter has a minimum RF output of 120 mW.

### FEATURES

- Selective calling leaves other users undisturbed
- Up to 960 individual codes possible
- Solid-state construction — no reeds
- Loudspeaker incorporated
- Reception free from noise and interference
- 150 mW transmitter output
- Transmit button automatically extends antenna
- Battery economiser
- Lightweight and compact
- Minimum of controls
- Hearing aid socket

### TYPE PF1 SC

The 'Pyecall' is a personal radiotelephone based on the highly-successful u.h.f. 'Pocketfone' equipment. While retaining most features of the 'Pocketfone', it also incorporates a loudspeaker for improved clarity and volume and a high-capacity, solid-state, selective call decoder. Selective calling allows individuals to be contacted without causing inconvenience to others of a group operating on the same frequency. The 'Pyecall' has a wide range of applications in industry and commerce and is particularly suitable for use by the police and security forces.

In a simple one-way paging system the personal radio equipment comprises a 'Pyecall' receiver type PF1 RSC only. If full two-way radiotelephone communication is required the equipment also includes a standard

'Pocketfone' transmitter. The 'Pyecall' personal radiotelephone equipment is designed to operate in conjunction with a control station equipped with a 'Pye Ninety' or 'Pye Nine-sixty' encoder; details of these 'Pyecall' encoders are given in Publication Ref. No. TSP223. Other compatible equipment can also be used.

Selective calling of receivers is determined by a two-tone sequential signal. Each receiver is fitted with a pair of plug-in filters, one for each tone, and there are up to 960 different two-tone codes available in the system. The 'Pyecall' equipment is of all solid-state construction; receiver selective calling is achieved without the use of reeds.



The 'Pyecall' operates in the u.h.f. band 425–470 MHz, at which frequencies there is virtually complete freedom from ignition noise and interference. The effective range of the 'Pyecall' will depend on the type of control station installation and on the area of operation. Very high quality communication can be achieved at a range of 2–5 miles (3–8 km) in built-up areas; the signal penetration inside buildings and in heavily-screened areas is most impressive.

The 'Pyecall' receiver is a small, lightweight unit which operates from inside the breast pocket where it is held in position by a clip. It is completely self-contained with built-in antenna and 9V rechargeable battery. A new battery economy circuit ensures a battery endurance of some 15 hours.

Controls are kept to a minimum. In addition to the on-off/volume control there is a tone defeat switch which, when operated, allows the user to listen in to all calls on the channel. A pre-set electronic squelch is fitted to suppress background noise in the absence of signals. A socket for the connection of an earpiece or additional loudspeaker is included.

The transmitter used in the two-way communication system is a similar compact unit which is normally carried in the side pocket. It has an r.f. output of over 150 mW, yet with its 18V rechargeable battery the transmitter weighs only 9.4 oz (266 gm). It is fitted with a retractable 6 in. (15.2 cm) antenna which automatically extends when the 'press-to-talk' button is operated.

Both 'Pyecall' receiver and transmitter are fitted in tough plastic cases. A range of accessories is available and includes battery chargers, carrying aids, earpiece and fittings.



## Technical Data TYPE PF1 SC

### GENERAL

<b>Operation</b>	F3 telephony. Two-frequency simplex for 2-way system
<b>Modulation</b>	Frequency
<b>Frequency Bands</b>	425–450 MHz, 440–470 MHz
<b>Channel Spacing</b>	25 kHz

### 'PYECALL' RECEIVER TYPE PF1 RSC

<b>Signalling Code Form</b>	Two-tone sequential
<b>Tone Frequency Range</b>	300–1000 Hz
<b>Maximum No. of Codes Available</b>	960
<b>Sensitivity</b>	1 $\mu$ V (p.d.) for 20 db quieting
<b>A.F. Output</b>	100 mW
<b>Antenna</b>	Concealed dipole
<b>Controls</b>	On–off and Volume. Defeat (selective call) switch
<b>Squelch</b>	Preset
<b>Power Supply</b>	One 9V nickel-cadmium battery. Endurance 15 hr. (nominal)
<b>Dimensions</b>	6.4 in. high x 2.3 in. wide x 1.1 in. deep, (16.2 x 5.9 x 2.9 cm)
<b>Weight</b>	9.5 oz (269 gm) less battery; 11 oz (312 gm) fitted with battery

### 'POCKETFONE' TRANSMITTER TYPE PF1 T

<b>R.F. Output</b>	150 mW minimum
<b>Modulation</b>	Peak deviation 5 kHz
<b>Antenna</b>	6 in. (15.2 cm) retractable antenna, automatically extended by operation of 'press-to-talk' switch
<b>Power Supply</b>	One 18V nickel-cadmium battery
<b>Control</b>	'Press-to-talk' switch
<b>Dimensions</b>	6 in. x 2.3 in. x 1.1 in. (15.4 x 5.9 x 2.9 cm)
<b>Weight</b>	6 oz (170 gm) less battery; 9.4 oz (266 gm) fitted with battery

*Typical figures based on normal operating conditions*

*Specification details subject to change without notice*

## PYE TELECOMMUNICATIONS LTD.

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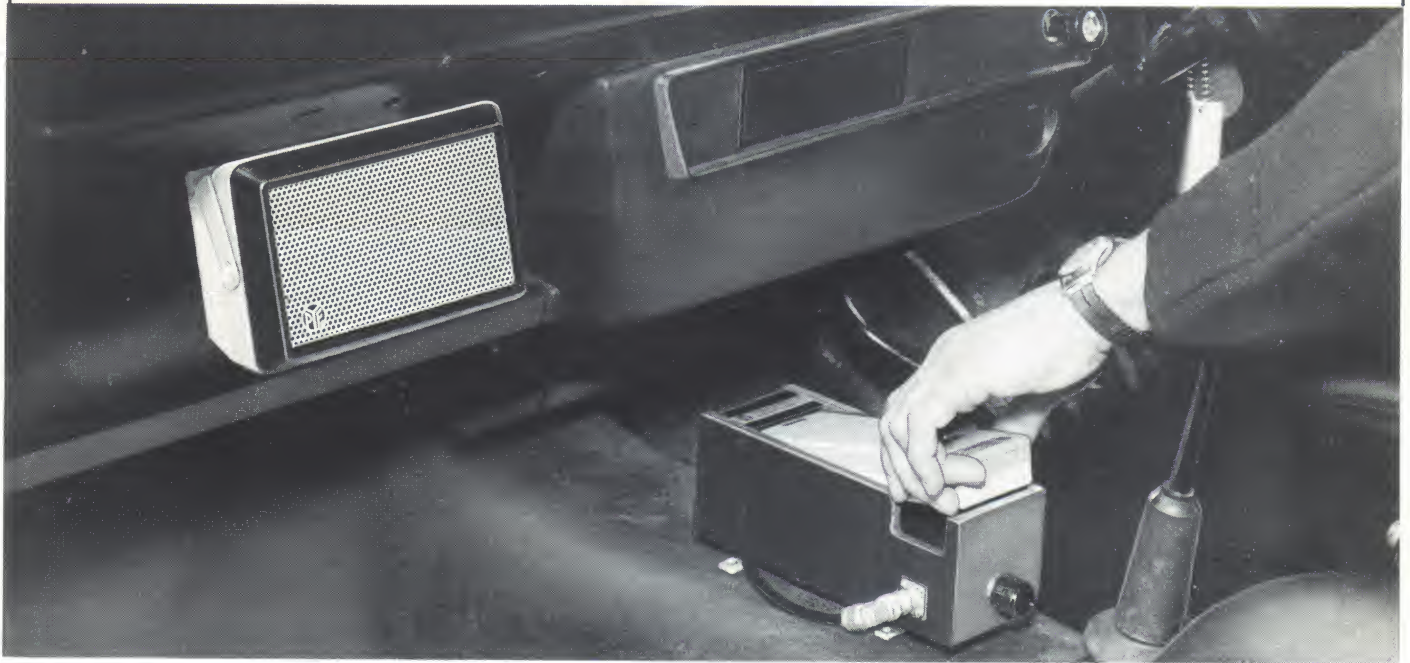
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Cables: PYETELCOM CAMBRIDGE



# Pye 'Pocketfone' Adaptor



HIGH-GAIN EXTERNAL ANTENNA  
OVERCOMES SCREENING  
IMPROVED READABILITY OF WEAK  
SIGNALS

The Pye 'Pocketfone' Adaptor has been specially designed to overcome the problem of screening which arises when 'Pocketfone' receivers are operated inside vehicles such as Unit Beat Police Cars. The installation gives the receiver a performance at least equivalent to that obtained when operating outside a vehicle. The improvement in the readability of signals is especially advantageous when working in weak signal areas. The audio output provided is comparable to that of a standard mobile

2.5W AUDIO OUTPUT  
RECEIVER BATTERY CHARGE  
MAINTAINED

installation. In addition, the receiver battery charge is maintained from the vehicle supply.

The installation comprises the adaptor itself, which can be conveniently mounted on the transmission tunnel (as illustrated) or elsewhere, a separate loudspeaker unit and a high-gain UHF antenna.



The receiver clips easily into the adaptor, making automatic connection, and is just as simple to remove. Existing studs on the base of the 'Pocketfone' make contact with spring-loaded pins for the audio and charging facilities; RF signals from the external antenna are capacity-coupled to the internal antenna of the receiver.

The  $\frac{3}{4}$ -wave whip antenna has a gain of 3 db relative to a  $\frac{1}{4}$ -wave antenna and is roof-mounted for optimum performance. Vehicle screening is overcome. The improved signal/noise ratio makes weak signals easier to read and increases the effective operating range of the receiver.

The adaptor is connected to the vehicle 12V battery which supplies power for the internal amplifier and battery charger. The amplifier is fitted with a volume control and provides up to 2.5W output from the loudspeaker — sufficient to allow the user to hear calls when outside his vehicle. The receiver battery is automatically placed on trickle charge while the unit is in the adaptor, and its charge is thus maintained. A switch associated with the volume control allows the adaptor to be switched off when not in use.

The equipment is easy to install and maintain.

## Technical Data

### ADAPTOR UNIT

Power Input	12V vehicle supply (fused at 3A)
Current Consumption	750 mA maximum
Controls	On-off/volume control
Audio Output	2.5W (adjustable by volume control)
Mounting	4-hole fixing using suitable self-tapping screws
Dimensions	76 mm wide x 89 mm high x 216 mm deep (incl. knob) (3 x 3 $\frac{1}{2}$ x 8 $\frac{1}{2}$ in.)
Weight	0.6 kg (1 lb 5 oz)
Finish	Black vinyl-painted wood

### LOUDSPEAKER UNIT

Mounting	Adjustable bracket
Dimensions	146 mm wide x 95 mm high x 67 mm deep (5 $\frac{3}{4}$ x 3 $\frac{3}{4}$ x 2 $\frac{5}{8}$ in.)
Weight	0.54 kg (1 lb 3 oz)
Finish	Smoke grey case with black ABS plastic padded surround

### ANTENNA

Gain	3 db (minimum) relative to $\frac{1}{4}$ -wave ground-plane antenna
Length	610 mm (2 ft) approx.
Feeder	UR 76; length 3.6 m (12 ft)
Connector	BNC elbow plug
Mounting Base	Hinged, chrome-plated brass with high-impact Bakelite insulator
Mounting Hole	14 mm ( $\frac{1}{2}$ in.) diameter

*Typical figures based on normal operating conditions*

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# Pye 'Pocketfone' Accessories

Publication TSP 164/6



- Carrying Case
- Earpiece and Ear-hangers
- Audio Extension Leads
- Acoustic Tube
- Epaulette Loudspeaker
- Carrying Pouches
- Wrist and Belt Straps
- Battery Charger
- Unit Charger
- Rechargeable Batteries

# Pye 'Pocketfone' Chargers

## Battery Charger Type BC4

Battery charger type BC4 is for recharging up to twelve transmitter and twelve receiver batteries at the same time. There are two banks of twelve compartments each: one for 18V transmitter batteries and the other for 9V receiver batteries. There is no connecting of leads; spring contacts automatically connect the battery into circuit when it is inserted. Each bank of batteries can be switched to charge at a normal or trickle rate.

Test compartments using dynamic circuits are provided for testing transmitter and receiver batteries. A meter indicates the number of hours to charge. The battery charger operates from standard a.c. power supplies.

Power Supply: 100–150V, 190–240V a.c., 50–60 Hz

Dimensions: Length 17½ in. Height 5 in. Depth 4½ in.  
(45 × 12.7 × 11.4 cm)

Weight: 7 lb 2 oz (3.2kg) Part No. AT00040/1



## Unit Charger Type BC5

The unit charger type BC5 allows the 'Pocketfone' batteries to be recharged without removing them from the transmitter and receiver units. The 'Pocketfone' remains operational while its batteries are being recharged; a listening-out watch can be maintained on the receiver and the transmitter can be operated in situ.

Studs on the base of the transmitter and receiver units automatically contact when the units are inserted into the charger. Individual lamps indicate that the batteries of each unit are being recharged.

A switch selects trickle or full charge.

Power Supply: 115V, 210V or 240V  $\pm 5\%$  a.c., 50–60 Hz

Colour: Dark Blue with Grey panel

Dimensions: Length 8½ in. Height 4 in. Depth 4½ in.

(20.5 × 10.2 × 12 cm)

Weight: 3 lb 5 oz (1.5 kg)

Part No. AT00041

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# Pye 'Pocketfone 70' Personal Radiotelephones

Types PF2 FMB, PF2 FMB2e,  
PF2 FMBC1 & PF2 MNB2e

outstanding 3-channel VHF FM body-worn portables



#### LONG ENDURANCE

— 20 hours average use without recharging

#### MODULAR CONSTRUCTION IN TOUGH POLYCARBONATE CASE

— reliable and easy to maintain

#### LOUD & CLEAR RECEPTION

— high audio power; 50 mm (2 in.) loudspeaker

#### OPTIONS

— selective call decoder, encoder or Tone Lock;  
wide range of accessories

These new personal radiotelephones are from the technically-advanced 'Pocketfone 70' range of rugged, lightweight portable units designed by Pye Telecom to satisfy an increasing diversity of applications in public service, commerce and industry.

'Pocketfone 70', type PF2 FMB, is a frequency modulated unit with an excellent specification for VHF portable equipment. Type PF2 FMB2e is an intrinsically safe version with BASEEFA certification by the UK Dept. of Trade and Industry for use in flammable atmospheres. Type PF2 FMB C1 is a further special version with Class C1 approval for safe operation in mines. Type PF2 MNB2e is a low power version of the intrinsically safe equipment for marine applications.

State-of-the-art low current design and the Pye battery economiser combine to give a battery endurance of 20 hours under average conditions. The 15V nickel-cadmium battery, common to the entire 'Pocketfone 70' range, uses sintered cells for extra performance. It is easy to change and can be recharged in or out of the unit.

The all solid-state modular transceiver and its battery are housed in a rugged, showerproof moulding of hard-wearing polycarbonate. The loudspeaker-microphone with send/receive switch forms a separate handy attachment, allowing the transceiver to be carried elsewhere on the person. There is a specially-designed leather case which can be attached to the waist belt or, with the addition of a strap, slung from the shoulder. A flexible wire antenna can be concealed in the strap. A lightweight harness is also available. Details of accessories are given in Publication Ref. TSP384.

Crystal clear reception with ample volume is provided by an audio output of 500 mW driving the 50 mm (2 inch) loudspeaker-microphone unit.

Optional features include a selective calling decoder using the 'Pyecall' two-tone sequential system. This system allows up to 960 portable units to be called individually. Alternatively, with types PF2FMB and PF2FMB2e, a single tone encoder can provide facility switching (e.g. talkthrough) at the base station. As a further alternative, (type PF2FMB only), a Tone Lock encoder and decoder can be fitted, enabling the equipment to be operated in any system using tone squelch to EIA standards.

 **TELECOM**

# Technical Data

PUBLICATION REF. No. TSP222/10  
Printed in England October 1975 5M

## GENERAL

<b>Operation</b>	Single or two-frequency simplex												
<b>Modulation</b>	Frequency (phase)												
<b>Frequency Bands</b>	<table> <tr> <td>Band A1 148–162 MHz</td><td>Band E1 68– 79 MHz</td></tr> <tr> <td>Band A2 160–174 MHz</td><td>Band E2 77– 88 MHz</td></tr> <tr> <td>Band A4 156–162 MHz (type PF2 MNB2e only)</td><td>Band P1 79– 91 MHz</td></tr> <tr> <td>Band B1 132–146 MHz</td><td>Band P2 89– 102 MHz</td></tr> <tr> <td>Band B2 142–156 MHz</td><td>Band M1 105–108 MHz (transmit only)</td></tr> <tr> <td></td><td>Band M2 138–141 MHz (receive only)</td></tr> </table>	Band A1 148–162 MHz	Band E1 68– 79 MHz	Band A2 160–174 MHz	Band E2 77– 88 MHz	Band A4 156–162 MHz (type PF2 MNB2e only)	Band P1 79– 91 MHz	Band B1 132–146 MHz	Band P2 89– 102 MHz	Band B2 142–156 MHz	Band M1 105–108 MHz (transmit only)		Band M2 138–141 MHz (receive only)
Band A1 148–162 MHz	Band E1 68– 79 MHz												
Band A2 160–174 MHz	Band E2 77– 88 MHz												
Band A4 156–162 MHz (type PF2 MNB2e only)	Band P1 79– 91 MHz												
Band B1 132–146 MHz	Band P2 89– 102 MHz												
Band B2 142–156 MHz	Band M1 105–108 MHz (transmit only)												
	Band M2 138–141 MHz (receive only)												
<b>Channel Spacing</b>	12.5 kHz (type S), 20 kHz (type R) or 25 kHz (type V) optional												
<b>No. of Channels</b>	3												
<b>Switching Bandwidth</b>	±0.2% of mean operating frequency												
<b>Power Supply</b>	15V (nominal) rechargeable nickel-cadmium battery. Capacity: 200 mAh												
<b>Battery Endurance</b>	For 2% transmit, 88% receiver standby, 10% receive (ratio 1:44:5) 20 hr For 5% transmit, 85% receiver standby, 10% receive (ratio 1:17:2) 11 hr												
<b>Current Consumption</b>	Transmit: 300 mA (type PF2 FMB at 13.8V input) Receiver standby (economiser operative): 0.8 mA Receive: 32 mA												
<b>Operating Temperature Range</b>	–10°C to +50°C ambient. Versions for use over a wider temperature range are available where local specifications require this												
<b>Operator Controls</b>	Channel switch; On/off volume control; 'Press-to-transmit' buttons on loudspeaker-microphone and top of unit (parallel-operating); Tone defeat/initiating button (selective call, Tone Lock and encoder versions only)												
<b>Overall Dimensions</b>	194 mm high x 85 mm wide x 36 mm deep (7.6 x 3.3 x 1.4 in.)												
<b>Weight</b>	780 g (27½ oz) complete with battery and loudspeaker-microphone unit												
<b>Finish</b>	Black												
<b>Options</b>	(i) Tone Lock (type PF2FMB only), selective calling decoder or encoder (ii) Carrying aids, antennas, battery chargers etc. (for details of accessories see Publication Ref. No. TSP384)												

## RECEIVER

<b>Sensitivity</b>	20 db quieting for 0.5 µV (p.d.) signal input
<b>Signal/Noise Ratio</b>	12 db SINAD for 0.4 µV (p.d.) signal input
<b>Audio Output</b>	Type PF2 FMB: 500 mW with less than 10% distortion Intrinsically safe versions: 350 mW with less than 10% distortion
<b>Audio Response</b>	Between +1 db and –3 db of a 6 db per octave de-emphasis characteristic from 300 Hz to 3 kHz

## TRANSMITTER

<b>Power Output</b>	Type PF2 FMB: 1.5W (minimum) Types PF2 FMB2e and PF2 FMBC1: 1W (minimum) } measured at 13.8V input Type PF2 MNB2e: 250 mW
<b>Modulation Response</b>	Between +1 db and –3 db of a 6 db per octave pre-emphasis characteristic from 300 Hz to 3 kHz
<b>Modulation</b>	Adjustable up to 5 kHz peak deviation
<b>Modulation Distortion</b>	Less than 10% at 3 kHz deviation with 1 kHz modulation

*Typical figures based on normal operating conditions  
Pye policy is one of continuous improvement, therefore the right is reserved to change specifications without notice.*

**NOTE:** not all frequency bands, options etc. are available for all types and marketing areas.

The equipment is suitable for single or two-frequency simplex operation with 12.5 kHz, 20 kHz or 25 kHz channel spacing. There is a choice of frequency bands in the range 68–108 MHz, 132–174 MHz. There is excellent rejection of spurious and harmonic frequencies.

Standard equipment has only three controls: a combined on-off switch and volume control, 3-way channel selector and a 'press-to-transmit' button. A 'defeat' button is added for selective call and Tone Lock versions to allow the operator to listen out before transmitting and to monitor other calls on the channel when required; in the encoder version, this button initiates tone transmission.

Automatic battery chargers available for use with these personal sets are readily adaptable to accept either the battery itself or the complete transceiver unit. Charger type BC 10A is for a single battery or unit; type BC 11A is a larger version with capacity for eight batteries or units in any combination. Vehicle adaptor, type BC 12, in addition to recharging the transceiver battery, gives increased range by connecting the unit to the vehicle external antenna.



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**Cables: PYE TELECOM CAMBRIDGE**



# Pye 'Pocketfone 70' Personal Radiotelephone Type PF 3 FMH

a powerful 3-channel VHF hand-held unit



#### HIGH SPECIFICATION

- 8-element crystal filter selectivity

#### POWER + ENDURANCE

- 2W minimum RF output; 21 hours average use without recharging

#### LOUD & CLEAR RECEPTION

- 500 mW audio power; 50 mm (2 in.) loudspeaker

#### RUGGED CONSTRUCTION

- hard-wearing polycarbonate case

#### OPTIONAL FEATURES

- selective call decoder or Tone Lock

This new personal radiotelephone is one of the technically-advanced 'Pocketfone 70' series of single-unit, 3-channel radiotelephones designed to suit a wide variety of applications in public service, commerce and industry.

'Pocketfone 70', type PF 3 FMH, is a VHF FM hand-held unit with an exceptional specification for portable equipment. Its excellent power/size ratio has been achieved together with high standards, which include the use of an 8-element crystal filter giving a high degree of selectivity.

The design combines high power with long endurance. A minimum of 2W RF output is provided by the transmitter. The endurance of the 15V rechargeable battery is considerably enhanced by the Pye economy device and extends to over 20 hours under average conditions of use. The nickel-cadmium battery, which is common to the whole 'Pocketfone 70' range, is easy to fit and remove and can be recharged in situ.

The receiver delivers an audio output of 500 mW into the 50 mm (2 inch) internal loudspeaker. Crystal clear reception at ample volume is ensured at all times.

The all solid-state transceiver and its battery supply are housed in a rugged, showerproof casing formed of hard-wearing polycarbonate. The total weight of the unit is only 708 gm (25 oz) complete with the wrist lanyard provided.

Optional features include the provision of a selective calling decoder using the 'Pyecall' two-tone sequential system. This system allows up to 960 portable units to be called individually. Alternatively, a Tone Lock encoder and decoder can be fitted, enabling the equipment to be operated in any system using tone squelch to EIA standards.

A carrying case is available as an option. Details of this and other accessories are given in Publication Ref. No. TSP384.



# Technical Data

PUBLICATION REF. No. TSP288/3  
Printed in England December 1975 4M

## GENERAL

<b>Operation</b>	Single or two-frequency simplex			
<b>Modulation</b>	Frequency (phase)			
<b>Frequency Bands</b>	Band A1	148—162 MHz	Band P1	79—91 MHz
	Band A2	160—174 MHz	Band P2	89—102 MHz
	Band B1	132—146 MHz		
	Band E1	68—78 MHz		
	Band E2	77—88 MHz		
<b>Channel Spacing</b>	12.5 kHz (type S) or 25/30 kHz (type V)			
<b>No. of Channels</b>	3			
<b>Switching Bandwidth</b>	±0.2% of mean operating frequency			
<b>Power Supply</b>	15V (nominal) rechargeable nickel-cadmium battery. Capacity: 200 mAh			
<b>Battery Endurance</b>	For 2% transmit, 88% receiver standby, 10% receive (ratio 1:44:5): 21 hr			
	For 5% transmit, 85% receiver standby, 10% receive (ratio 1:17:2): 11 hr			
<b>Current Consumption</b>	Transmit: 280 mA (measured at 13.8V input)			
	Receiver standby (economiser operative): 0.8 mA			
	Receive: 32 mA			
<b>Operating Temperature Range</b>	—30°C to +60°C ambient			
<b>Operator Controls</b>	Channel switch			
	On-off/volume control			
	'Press-to-transmit' button			
	Defeat button (selective call and Tone Lock versions only)			
<b>Overall Dimensions</b>	224 mm high x 85 mm wide x 36 mm deep (8.8 x 3.3 x 1.4 in.)			
<b>Weight</b>	708 gm (25 oz) <i>incl.</i> battery and lanyard, <i>less</i> antenna			
<b>Finish</b>	Black			
<b>Options</b>	(i) Tone Lock (25/30 kHz channel spacing only) or selective calling decoder			
	(ii) Carrying aids, antennas, battery chargers etc. (for details of accessories see Publication Ref. No. TSP384)			

## RECEIVER

<b>Sensitivity</b>	20 db quieting for 0.5 $\mu$ V (p.d.) signal input
<b>Signal/Noise Ratio</b>	12 db SINAD for 0.4 $\mu$ V (p.d.) signal input
<b>Audio Output</b>	0.5W with less than 10% distortion
<b>Audio Response</b>	Between +1 db and —3 db of a 6 db per octave de-emphasis characteristic from 300 Hz to 3 kHz

## TRANSMITTER

<b>Power Output</b>	2W (minimum) measured at 13.8V input
<b>Modulation Response</b>	Between +1 db and —3 db of a 6 db per octave pre-emphasis characteristic from 300 Hz to 3 kHz
<b>Modulation</b>	Adjustable up to 5 kHz peak deviation
<b>Modulation Distortion</b>	Less than 10% at 3 kHz deviation with 1 kHz modulation

*Typical figures based on normal operating conditions*

*Pye policy is one of continuous improvement, therefore the right is reserved to change specifications without notice.*

**NOTE:** not all frequency bands, options etc. are available for every marketing area.

Standard equipment has only three controls: a combined on-off switch and volume control, 3-way channel selector and a 'press-to-transmit' button. A 'defeat' button is added for selective call and Tone Lock versions to allow the operator to listen out before transmitting and to monitor other calls on the channel when required.

Automatic battery chargers available for use with the 'Pocketfone 70' are readily adaptable to accept either the battery itself or the complete transceiver unit. Charger type BC10A is for a single battery or unit; type BC11A is a larger version with capacity for eight batteries or units in any combination. Vehicle adaptor, type BC14, in addition to recharging the transceiver battery, gives increased range by connecting the unit to the vehicle external antenna.



**Pye Telecommunications Ltd.**  
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**Cambridge CB5 8PD, England**  
Telex: 81166 (PYETELCOM CAMBG)

Cables: PYETELCOM CAMBRIDGE



# Pye 'Pocketfone 70' Personal Radiotelephones Types PF5 UH & PF5 UH2e

new low cost personals from the UHF experts



#### SIMPLE TO OPERATE

- only two controls

#### COMPLETELY SELF-CONTAINED

- with highly efficient built-in antenna

#### LONG ENDURANCE

- 24 hours average use without recharging

#### LOUD AND CLEAR RECEPTION

- Up to 500 mW audio power; 50 mm (2 in.) loudspeaker

#### MODULAR CONSTRUCTION IN TOUGH POLYCARBONATE CASE

- reliable and easy to maintain

Now available with even better sensitivity  
and signal/noise performance

These new personal radiotelephones are from the technically advanced 'Pocketfone 70' series of rugged, lightweight radiotelephones designed to meet a wide variety of applications in public service, commerce and industry.

The PF5 UH is a frequency-modulated hand-held unit with an excellent specification for a UHF portable equipment. Operation in this band ensures virtually noise-free reception. Excellent signal penetration into buildings and heavily-screened areas is another important feature of UHF operation.

Simple to operate, the unit has only two controls: an on-off switch combined with the volume control and a 'press-to-transmit' button.

State-of-the-art low current design and the Pye battery economiser combine to give a battery endurance of 24 hours under average conditions. The 15V nickel-cadmium battery, common to the entire 'Pocketfone 70' range, uses sintered cells for extra performance. It is easy to change and can be recharged in or out of the unit.

Crystal clear reception with ample volume is provided by an audio output of 500 mW driving a 50 mm (2 in.) loudspeaker. The transmitter provides a minimum RF output of 0.5W.

The all solid-state transmitter and receiver are housed in a rugged, showerproof casing formed of hard-wearing polycarbonate. The total weight of the unit is only 525 gm (18½ oz.) complete.

Type PF5 UH2e is a special intrinsically safe version of the equipment, with BASEEFA certification EX71106 issued by the UK Dept. of Trade and Industry for use in flammable atmospheres.

Either version is provided with a wrist lanyard. Optional accessories include a leather carrying case which can be attached to the waist belt or, with the addition of a strap, slung from the shoulder. Full details of the range of accessories available are given in Publication Ref. No. TSP 384.



# Technical Data

## Types PF5 UH & PF5 UH2e

PUBLICATION REF. No. TSP269/7  
Printed in England May 1976 3M

### GENERAL

<b>Operation</b>	Single or two-frequency simplex
<b>Modulation</b>	Frequency (phase)
<b>Frequency Bands</b>	Band T1 405–440 MHz      Band U0 440–470 MHz
<b>Channel Spacing</b>	25 kHz (type V) or 50 kHz (type N) optional
<b>No. of Channels</b>	1
<b>Power Supply</b>	15V (nominal) rechargeable nickel-cadmium battery. Capacity: 200 mAh
<b>Battery Endurance</b>	For 2% transmit, 88% receiver standby, 10% receive (ratio 1:44:5) : 24 hr For 5% transmit, 85% receiver standby, 10% receive (ratio 1:17:2) : 15 hr
<b>Current Consumption</b>	Transmit: 160 mA Receiver standby (economiser operative): 0.8 mA Receive: 32 mA
<b>Operating Temperature Range</b>	–10°C to +55°C ambient. Versions for use over a wider temperature range are available where local specifications require a greater range
<b>Operator Controls</b>	On-off/volume control 'Press-to-transmit' button
<b>Overall Dimensions</b>	200 mm high x 63.5 mm wide x 38 mm deep (7.9 x 2.5 x 1.5 in.)
<b>Weight</b>	525 gm (18½ oz.) approx. complete with battery
<b>Finish</b>	Black
<b>Optional Extras</b>	Belt pouch or carrying case with shoulder strap (illustrated). See Publication Ref. No. TSP384 for full details of accessories

### RECEIVER

<b>Sensitivity</b>	20 db quieting for less than 0.5 $\mu$ V (p.d.) signal input
<b>Signal/Noise Ratio</b>	12 db SINAD for less than 0.4 $\mu$ V (p.d.) signal input
<b>Audio Output</b>	Type PF5 UH: 500 mW with less than 10% distortion Type PF5 UH2e: 300 mW with less than 10% distortion
<b>Audio Response</b>	Between +1 db and –3 db of a 6 db per octave de-emphasis characteristic from 300 Hz to 3 kHz

### TRANSMITTER

<b>Power Output</b>	Type PF5 UH: 0.5W (minimum) Type PF5 UH2e: 0.3W (minimum)
<b>Modulation Response</b>	Between +1 db and –3 db of a 6 db per octave pre-emphasis characteristic from 300 Hz to 3 kHz
<b>Modulation</b>	Adjustable up to 15 kHz peak deviation
<b>Modulation Distortion</b>	Less than 10% at 3 kHz deviation with 1 kHz modulation

*Typical figures based on normal operating conditions.*

*Pye policy is one of continuous improvement; therefore the right is reserved to change specifications without notice.*

*NOTE: not all frequency bands, options etc are available for each type and every market area.*

The equipment is suitable for single or two-frequency simplex operation and offers a choice of either 25 kHz or 50 kHz channel spacing. There is a choice of two frequency bands: 405–440 MHz or 440–470 MHz.

Helical resonators in the RF stage and a Schottky barrier mixer diode combine to ensure excellent RF selectivity, sensitivity and signal/noise performance with effective rejection of spurious responses and intermodulation products.

Automatic battery chargers available for use with the PF5 UH and PF5 UH2e are readily adaptable to accept either the battery itself or the complete transceiver unit. Charger, type BC16A, is for a single battery or unit; type BC17A is a larger version with sufficient capacity for eight batteries or units in any combination.



**Pye Telecommunications Limited.**

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	Body-worn (All types)	Handheld (3-channel)	Handheld (single channel)
<div></div> <div><b>Standard — multi-unit</b> This dual purpose charger has capacity for handling simultaneously any combination of batteries and complete 'Pocketfone 70' units up to a maximum of ten. In common with all 'Pocketfone 70' chargers, the charging compartment can be readily adapted to accept either the battery or complete radiotelephone unit. Studs on the base of the battery or unit make automatic contact when inserted. 'Pocketfone 70' units remain fully operational while in the charger. Rate of charge can be pre-adjusted to suit any specific requirement. Standard AC operation. (See Publication Ref. No. TSP488 for details.)</div>	Type BC11	Type BC11	Type BC17
<div></div> <div><b>Automatic — single unit</b> Similar in many respects to the standard multi-unit version, this charger provides rapid, safe re-charging of a single 'Pocketfone 70' battery or complete unit without attention. This version is particularly useful for re-charging the battery of a personal set whilst at the same time maintaining a listening watch. Once started, the automatic charging cycle provides a constant current for a fixed period followed by a safe 'trickle' rate to maintain the battery ready for use. A lamp lights to indicate fast charge and extinguishes for 'trickle' charge. Brief interruption in charging does not inhibit the cycle. (See Publication Ref. No. TSP488 for details.)</div>	Type BC10A	Type BC10A	Type BC16A
<div></div> <div><b>Automatic — multi-unit</b> The multi-unit version of the automatic single-unit charger, this equipment can accept up to eight batteries/units simultaneously in any combination. Each charging compartment is independently controlled and has an associated lamp to indicate the fast or trickle charge condition of the battery/unit fitted. (See Publication Ref. No. TSP488 for details.)</div>	Type BC11A	Type BC11A	Type BC17A
<div></div> <div><b>Vehicle adaptor</b> This accessory has a two-fold function. It overcomes the screening problem which arises when a 'Pocketfone 70' is operated inside a motor vehicle and, at the same time, maintains the battery charge of the personal set by trickle charging from the vehicle supply. The installation can provide the 'Pocketfone 70' with a performance better than that obtained when operating outside the vehicle. The compact adaptor is ideal for mounting in any position convenient to the driver. The personal unit slots easily into the adaptor and can be locked securely against theft. (See Publication Ref. No. TSP290 for details.)</div>	Type BC12	Type BC14	

NOTE: Body-worn personal units should be fitted with the coiled loudspeaker-microphone lead. Handheld units must be withdrawn from the adaptor for transmitting purposes.



# Pye 'Pocketfone 8' UHF Personal Radiotelephone Type PF8

a unique multi-mode single-unit personal communicator



New to the Pye 'Pocketfone' range and true to its tradition, the single-unit 'Pocketfone 8' marks yet another peak in the evolution of personal radio.

Designed to fit both hand and pocket, this exciting new UHF radiotelephone features a unique operational flexibility not previously available in a single unit. 'Pocketfone 8' has the extended scope necessary to meet the needs of an ever-increasing diversity of personal radio users, at the same time providing the freedom to choose the method of operation best suited to the immediate situation.

In an advanced specification, 'Pocketfone 8' includes many new features designed simply to provide users with easy, effective operation and a performance reliability second to none.

Lightweight, compact and self-contained, 'Pocketfone 8' is at the same time ruggedly constructed to meet the most demanding conditions of industrial service.

'Pocketfone 8' offers a choice from three tone-signalling facilities and, with future expansion in mind, makes this feature a convenient addition at any time.

'Pocketfone 8' — your personal from Pye.

- OPTIMUM OPERATIONAL FLEXIBILITY
- CHOICE OF TONE-SIGNALLING FUNCTIONS
- RUGGED, DURABLE CONSTRUCTION
- LIGHT, COMPACT & SELF-CONTAINED





## EXCEPTIONAL FLEXIBILITY

'Pocketfone 8' offers its user a choice of 3 operating modes.

First, in a concept new to personal radio, the PF8 becomes a telephone in your hand. Ergonomically designed for easy, comfortable operation, the unit is equally at home in either left or right hand. A microphone and twin-grille system near the base provide fully effective voice pick-up from either side of the unit. The receiver provides audio of high quality through a loudspeaker transducer at the top. The advantage of the telephone handset mode, particularly when operating in noisy surroundings, needs no emphasis.

Next, for certain applications (or just from preference), the PF8 can be conveniently operated from the breast pocket of a coat or overall. For this mode of operation, the top transducer functions as both loudspeaker and microphone. Fitted within its specially-designed, directional acoustic chamber, the transducer provides the loud and clear all-round performance necessary for effective two-way communication. The pocket clip fitted has a nylon grip to safeguard your clothing from damage.

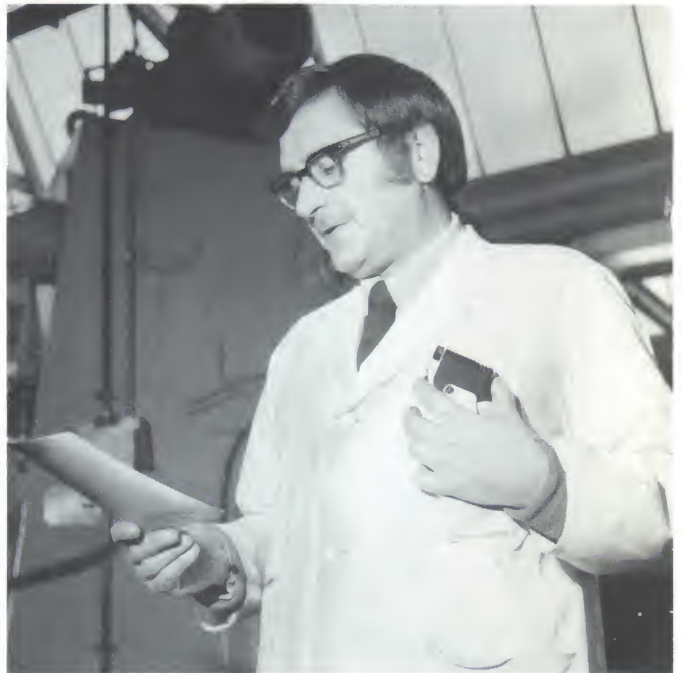
Finally, you can use the PF8 like any ordinary handheld personal . . . but you will probably not choose to — nor need to unless operating in a fringe area or difficult spot. Then, to enhance range, use of the microphone at the base will help you to get greater all-round clearance with less body screening of the unit. Again, there is choice of left or right hand operation.

Whatever the mode of use, the new 'Pocketfone 8' provides simple, effective operation with the minimum of effort.



*'Pocketfone 8' — a telephone in your hand . . .*

*. . . or for operation from the pocket*



## TONE SIGNALLING OPTIONS

'Pocketfone' 8 is system expandable. Three different tone-signalling options are available, any one of which can be factory-fitted or added at any time by your service facility. Space is available for two-way Tone Lock, a 'Pyecall' two-tone selective calling decoder, or a single tone encoder. Fitted with the 'Pyecall' decoder, 'Pocketfone 8' units are compatible with a new 'dial-out' system allowing individual units to be called from any extension of a private automatic exchange. Details of these systems are given in separate leaflets.

## DUAL PHASE LOCK LOOP RECEIVER

Advanced techniques in receiver design include the use of a dual phase lock loop circuit providing a high degree of automatic frequency control. The technique optimises sensitivity and selectivity, provides the receiver with excellent self-netting properties, and minimizes the audio distortion which can result from frequency errors in conventional FM receivers.

## UHF OPERATION

'Pocketfone 8' operates at UHF — which means virtually noise-free reception. There is a choice of two bands in the frequency range 405–470 MHz. Excellent signal penetration into buildings and heavily screened areas is another important feature of UHF operation.

## RELIABLE & MAINTAINABLE

90% of the electronics is based on a small number of plug-in modules, the design using proven thick film packages, monolithic integrated circuits and discrete components in their most advantageous combination. The multi-layer circuit board gives a neat layout with few interconnections.

Excellent RF selectivity is achieved through miniaturised helical resonators, ruggedly designed for operation over a wide temperature range. The carrier-operated squelch is derived from a coherent mute detector, operationally unaffected by changes in temperature or modulation.

It all adds up to greater reliability and simplified maintenance.



## RUGGED CONSTRUCTION

The transceiver is built on a rugged, die-cast aluminium frame and fitted with a case of hard-wearing, high-impact polycarbonate. The result: a light-weight, shower-resistant construction tough enough to withstand the rigorous service conditions demanded by many personal radio users today.

## FULLY INTEGRAL ANTENNA

With its high efficiency internal antenna, 'Pocketfone 8' is a completely self-contained, single unit. Transmit/receive switching is completely solid-state. No external connections, no projections and no risk of accidental mistuning. Trim, compact, easy to handle.

## STANDARD LOW VOLTAGE CELLS

Pye 'Pocketfone 8' is powered by two standard, rechargeable nickel-cadmium cells. Chosen for their rugged performance, long life and suitability to rapid charging techniques, these low voltage cells are also inexpensive to replace. A built-in converter gives highly stabilized supplies of 6V and 10V for transceiver operation.

## MORE PF8 PLUS FEATURES

'Pocketfone 8' includes a small, light-emitting diode indicator to confirm RF carrier transmission, and also give an indication of battery state. With power below a predetermined level, the indicator will not be illuminated.

'Pocketfone 8' is supplied complete with a swivel-fitting safety lanyard to prevent loss or damage if the unit accidentally falls. The lanyard is fitted with a toggle for button-hole fixing and can also be used as a wrist strap.

'Pocketfone 8' provides control of volume in switched steps, with visual indication of the adjusted level. More reliable, it is also easier to adjust in the dark and less prone to accidental alteration.

## RANGE OF CHARGERS

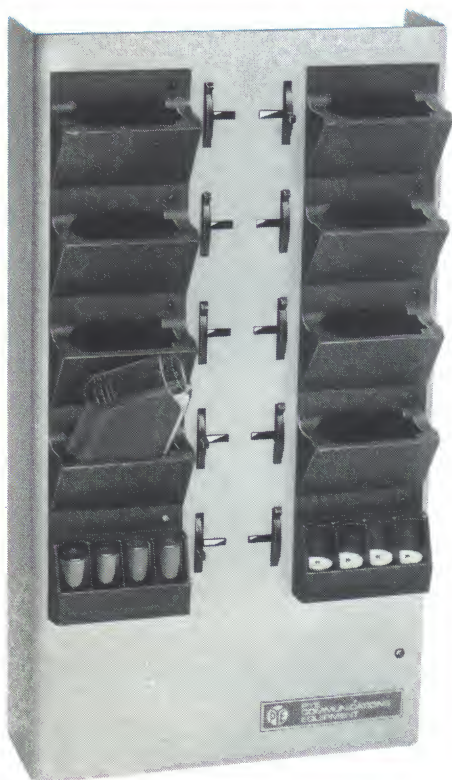
'Pocketfone 8' is equipped with base contacts for 'in situ' battery charging. A comprehensive range of chargers has been specially designed to cater for this method of charging and the separate recharging of cells.



*The two standard nicad cells which power the PF8 are easily accessible and can also be recharged 'in-situ'.*

Type No.	Capacity	Mounting
BC21A	1 PF8 unit + 1 pair of cells	Desk/shelf
BC22A	8 PF8 units + 4 pairs of cells	Wall/shelf
BC22D	20 pairs of cells only	Wall/shelf

In type BC21A, simultaneous full charging of the unit and trickle charging of the cells, or vice versa, can be switch-selected. Full charging is timed over a 7 hr period — with visual indication of progress — after which automatic switching to trickle charge occurs. In types BC22A and BC22D, each unit or 4-cell compartment is individually timed.



*Multi-charger type BC22A for wall-mounting. Type BC22D is of similar design, with each of the ten compartments accommodating 4 cells.*



*Charger type BC21A provides simultaneous charging of a single PF8 plus one pair of cells.*



# Technical Data

PUBLICATION REF. No. TSP521/3  
Printed in England June 1976 5M

## Type PF8

### GENERAL

Operation	Single or two-frequency simplex
Modulation	Frequency (phase)
Frequency Range	405–470 MHz
Frequency Bands	Band T1 405–440 MHz Band U0 440–470 MHz
Channel Spacing	25 kHz (12.5 kHz to special order)
No. of Channels	1
Power Supply	2.5V (nominal) using two rechargeable nickel-cadmium cells, series-connected
Battery Endurance	For 2% transmit, 10% receive, 88% receiver standby (ratio 1:5:44) : 20 hr For 5% transmit, 10% receive, 85% receiver standby (ratio 1:2:17) : 12 hr
Operating Temperature Range	–10°C to + 55°C ambient
Operator Controls	On-off/volume control 'Press-to-transmit' switch (double action to suit different operating modes) Press-button for (i) carrier squelch override (basic and Tone Lock versions) or (ii) tone defeat/reset ('Pyecall' selective calling version) or (iii) tone transmission (Tone encoder version)
Overall Dimensions	Height: 200 mm (7.9 in.) Width: 66 mm (2.6 in.) Depth: 26 mm (1 in.) <i>excluding</i> pocket clip
Weight	510 gm (18 oz) complete with battery
Finish	Royal blue polycarbonate, with satellite chrome control panel and clip.

### RECEIVER

Sensitivity	20 db S + N/N for 0.5 $\mu$ V (p.d.) signal input 12 db SINAD for 0.4 $\mu$ V (p.d.) signal input
Spurious Response Attenuation	Better than 60 db
Selectivity (two-signal)	Better than 60 db
Intermodulation Attenuation	Better than 60 db
Frequency Stability	Better than $\pm$ 250 Hz over the operating temperature range (standard)
Audio Output	120 mW (minimum) into high efficiency, low distortion transducer

### TRANSMITTER

Power Output	500 <sup>1</sup> mW
Spurious Emission	Less than 25 $\mu$ W
Frequency Stability	Better than $\pm$ 3 kHz over the operating temperature range (standard)
Modulation	Adjustable up to 5 kHz peak deviation
Modulation Response	Basically within +1, –3 db of a 6 db per octave pre-emphasis characteristic from 300 Hz to 3 kHz, but adjusted to suit characteristic of microphone in use.
Modulation Distortion	Less than 10% at 60% system deviation with 1 kHz modulation

*Typical figures based on normal operating conditions*

*Pye policy is one of continuous improvement; therefore the right is reserved to change specifications without notice*

**NOTE:** *Not all frequency bands, options etc. are available for every market area.*

**Pye Telecommunications Limited.**

Cambridge CB5 8PD England Telephone: Cambridge (0223) 61222 Telex: 81166 Cables: PYE TELECOM CAMBRIDGE

# Pye 'Pocketfone' UHF Radiotelephone Receiver Type PF9R Transmitter Type PF9T

new generation two-unit personal communications



## SMALL LIGHTWEIGHT UNITS

## UNIQUE MULTI-CHANNEL MODE

Pye Telecom, pioneers of UHF personal 'Pocketfone' communications, proudly introduce the next generation of two-unit, two-way personal radio. The new 'Pocketfone', type PF9, is the natural successor to the highly successful PF1 series, which is in extensive service with Police Forces and many commercial and industrial organisations world-wide.

The advanced design of the PF9 series includes many improvements and operational refinements which provide a high degree of flexibility. Extensive use of the latest space-

## FULLY INTEGRAL ANTENNAS

## RUGGED CONSTRUCTION

saving solid state techniques has resulted in a more rugged and reliable equipment, much reduced in size, lighter and easier to carry on the person. In addition, the new 'Pocketfone' has a unique multi-channel mode of operation, plus visual monitoring of RF power.

Just a few of the many features which make it, in every way, a worthy successor to the PF1.





## SMALL & LIGHTWEIGHT

By using advanced electronic and mechanical techniques, both transmitter and receiver are substantially reduced in size and weight. Lighter and more convenient to wear. Neat and unobtrusive.

## UNIQUE MULTI-CHANNEL CAPABILITY

The new 'Pocketfones' fully meet modern requirements for multi-channel operation. Any one of 60 channels can be selected by plugging in a frequency module, permitting the utmost operational flexibility. Easily accessible to the user and equally simple to change, the modules enable the rapid selection of transmitter and receiver for operation on any 25 kHz channel within a 1.5 MHz bandwidth. The channel number is visible through a window in the access door at the base of each unit. Transmitter and receiver channel modules are colour coded and mechanically keyed to prevent interchange. The new technique saves channel switch space and eliminates the attendant risk of switching faults.

Advanced techniques in receiver design optimize the inherent advantages of dual phase locked loop circuits — with their associated high degree of automatic frequency control — to make tuning adjustment completely unnecessary when changing channel within the specified range. An important additional advantage is the self-netting property of the receiver, ensuring faithful tracking of any possible frequency drift throughout the system. This technique optimises receiver sensitivity and selectivity, and reduces audio distortion which can result from frequency errors in conventional FM receivers.

## FULLY INTEGRAL ANTENNAS

Both receiver and transmitter have built-in antennas. Each unit incorporates a highly efficient plate antenna with ground plane, housed in the upper part of the case.



*The miniature PF9R receiver fits comfortably into a breast pocket or clips securely to the jacket lapel.*

## RELIABLE AND MAINTAINABLE

The design incorporates the latest proven solid state techniques, the receiver making optimum use of plug-in thick film modules and monolithic integrated circuits. Transmitter and receiver chassis can be easily removed as an entity from their cases and are, therefore, suitable for testing by automatic techniques. The plug-in modular construction also facilitates rapid fault diagnosis.



*Plug-in channel module and single power cell are easily accessible in the lower compartment of each 'Pocketfone' unit. The channel number shows through a window in the access door.*



*Charger type BC21B provides simultaneous charging of one pair of 'Pocketfones' plus two cells.*



## EXCELLENT VOLTAGE STABILISATION

The new transmitter and receiver units are each powered by a single, rugged, 1.2V rechargeable nickel-cadmium 'A' cell. The output of the cell is converted to stabilised levels of 6V and 10V. The single cell has been chosen for its longer service expectancy, lower cost and better suitability for rapid charging techniques.

## OPERATIONAL FLEXIBILITY

The transmitter is equally at home in the right or left hand. The design and position of the microphone and its grille provides fully effective operation from either side of the unit.

## WIDE RANGE OF CHARGERS

Contacts on the bases of transmitter and receiver provide for cell recharging *in situ*. A range of custom-built chargers caters for this method and for the separate recharging of cells.

Type No.	Capacity	Mounting
BC21B	1 PF9R & 1 PF9T + 2 cells	Desk/shelf
BC22B	8 PF9R & 8 PF9T + 10 cells	Wall/shelf
BC22E	50 cells only	Wall/shelf
BC23	7 cells only	Desk/shelf
BC24	56 cells only	Wall/shelf

In type BC21B, simultaneous full charging of the units and trickle charging of the cells, or vice versa, can be switch-selected. Full charging is timed over a 7 hr period — with visual indication of progress — after which automatic switching to trickle charge occurs. In types BC22B and BC22E, each pair of units or 5-cell compartment is individually timed. Types BC23 and BC24 provide automatic timing of the complete batch of cells only.

## 'POCKETFONE' PLUSSES

An essential operational feature is provided by a sensing detector which inhibits the receiver when it is in close proximity to its companion transmitter. The purpose of this is to reduce the risk of 'ring-round' feedback under 'talkthrough' conditions.

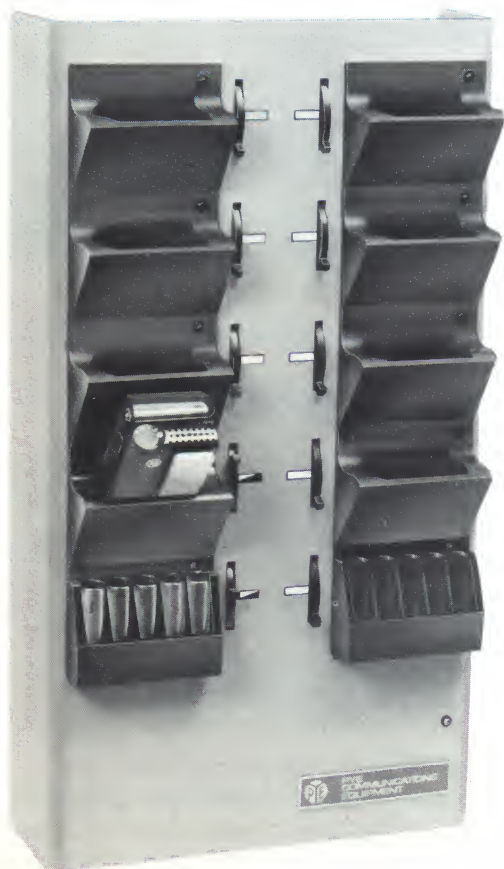
A red l.e.d. indicator on the transmitter monitors RF carrier power, also giving an indication of battery state. With power below a pre-determined level the light is extinguished.

Excellent RF selectivity is achieved through miniaturised helical resonators, ruggedly designed and virtually unaffected by temperature changes. Squelch action is derived from a coherent mute detector, carrier-operated and similarly unaffected by changes in temperature or modulation.

There is a socket on the receiver for extending audio signals to an earpiece.

## ACCESSORIES

- (i) **Wrist lanyard (p/no BT27008)**. Obviates damage to the transmitter if accidentally released by the hand.
  - (ii) **Audio extension lead (p/no AT12798)**
  - (iii) **Earpiece (p/no FH01006)**
  - (iv) **Ear-hanger (p/no FH01008)**
  - (v) **Frequency modules**
    - receiver (p/no AT12566)
    - transmitter (p/no AT12894)
  - (vi) **Spare battery (p/no FB01324)**
- For better reception of signals in noisy environments and also to provide privacy.



*Multi-charger type BC22B is designed for wall-mounting and can charge up to eight pairs of 'Pocketfone' units and ten cells simultaneously. Each pair of units and each 5-cell compartment is individually timed and its progress visually indicated.*

*Type BC22E is of similar design but with each of the ten compartments accommodating 5 cells.*



# Technical Data

PUBLICATION REF. No. TSP400/4  
Printed in England March 1976 4M

## Types PF9R & PF9T

### GENERAL

*The equipment conforms to Home Office specification MPT 102*

<b>Operation</b>	Single or two frequency simplex	
<b>Modulation</b>	Frequency (phase)	
<b>Frequency Range</b>	Band U0 440—470 MHz	Band T1 405—440 MHz
<b>Channel Spacing</b>	25 kHz (type V)	
<b>No. of Channels</b>	60-channel capability without retuning	
<b>Switching Bandwidth</b>	Frequency modules can be plugged into both transmitter and receiver for operation on any channel within a bandwidth of $\pm 0.75$ MHz of the nominal adjustment frequency.	
<b>Operating Temperature Range</b>	—10°C to +55°C ambient	

### RECEIVER (Type PF9R)

<b>Sensitivity</b>	20 db (S+N)/N ratio for 0.5 $\mu$ V (p.d.) signal input	
<b>AF Output</b>	80 mW into a 50 ohm load	
<b>Intermodulation Attenuation</b>	Better than 60 db	
<b>Spurious Response Attenuation</b>	Better than 60 db	
<b>Power Supply</b>	1.2V (nominal) nickel-cadmium rechargeable cell	
<b>Current Consumption</b>	Standby: 40 mA Receive: 135 mA	} typical figures at nominal supply voltage
<b>Battery Life</b>	10 hours receive, for standard rechargeable cell (with standby/speech ratio 4:1 and average audio output during speech)	
<b>Operator Control</b>	On-off/volume	
<b>Antenna</b>	Internal plate with ground plane	
<b>Squelch</b>	Internally pre-set, carrier-operated	
<b>Dimensions</b>	130 mm high x 55 mm wide x 20 mm deep (5.1 x 2.2 x 0.8 in. approx.)	
<b>Weight</b>	212 gm (7.5 oz) approx. complete with battery	
<b>Finish</b>	Royal blue polycarbonate	

### TRANSMITTER (Type PF9T)

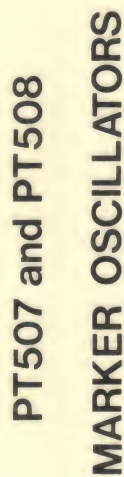
<b>Power Output</b>	300 mW
<b>Spurious Emissions</b>	Less than 10 $\mu$ W
<b>Modulation</b>	Adjustable to 5 kHz peak deviation
<b>Power Supply</b>	1.2V (nominal) nickel-cadmium rechargeable cell
<b>Current Consumption</b>	1.5A (typical figure at nominal supply voltage)
<b>Battery Life</b>	Adequate for an 8 hr. tour of duty
<b>Operator Control</b>	'Press-to-transmit' button
<b>Indicator Lamp</b>	Carrier power monitoring by L.E.D. (red)
<b>Antenna</b>	Internal plate with ground plane
<b>Dimensions</b>	130 mm high x 55 mm wide x 20 mm deep (5.1 x 2.2 x 0.8 in. approx.)
<b>Weight</b>	171 gm (6 oz) approx. complete with battery
<b>Finish</b>	Royal blue polycarbonate

*Typical figures based on normal operating conditions*

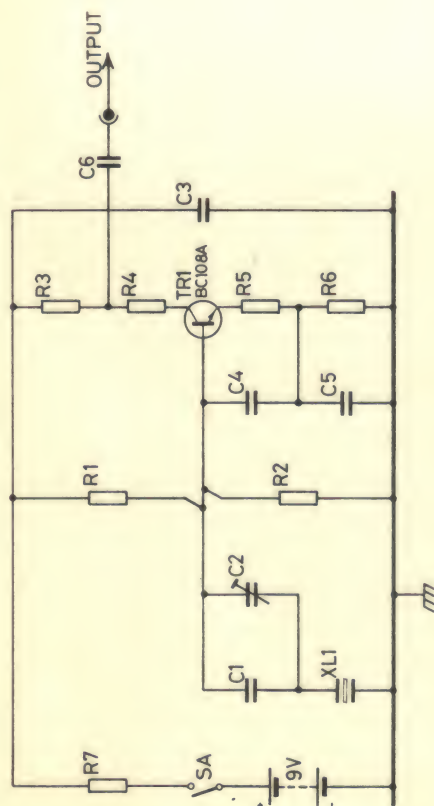
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# INSTRUCTION CARD



## PARTS LIST

Code	CAPACITORS	Part No.
C1	22pF ±5%	5200002
C2	6-25pF Trimmer	5810016
C3	0.01uF -20% + 40%	5070013
C5,C4	1nF ±5%	5230004
C5,C4 (PT508 only)	220pF ±5%	5220045
C5,C4 (PT507 only)	4n7 -20% + 40%	5050031

## RESISTORS

R1,R2	33k ohm	±5%	4265334
R3	470 ohm	±5%	4263474
R4	150 ohm	±5%	4263154
R5 (PT508 only)	22 ohm	±5%	4262224
R5 (PT507 only)	39 ohm	±5%	4262394
R6	1k8 ohm	±5%	4264184
R7	220 ohm	±5%	4263224

## MISCELLANEOUS

TR1	BC108A	6150106
XL1 (PT508 only)	455 kHz (Specification)	9970630
XL1 (PT507 only)	10.7 MHz (Specification)	9970631
SA	ON/OFF Slider Switch	7330009
—	Output Socket	6685098
—	Output Plug	6670073
—	Battery Connector	6685089

The information given in this publication is subject to alteration without prior notice.

RAYE TELECOMMUNICATIONS LTD. CAMBRIDGE ENGLAND

Printed in England

TP664



The Pye PT507 and PT508 are both crystal-controlled transistor oscillators operating at 10.7 MHz and 455 kHz respectively. They may be used wherever a high accuracy frequency marker is required. Each type of oscillator is powered by an internal 9V dry battery (Ever Ready PP3 or equivalent) and is operated by a simple ON/OFF slider switch.

They are primarily intended for use in netting mobile communication receivers, having an intermediate frequency (i.f.) of 10.7 MHz or 455 kHz, to their associated fixed transmitter. They may also be used for checking the calibration of a tunable signal generator, before aligning receivers which incorporate those intermediate frequencies.



Approximate charging times for a FULLY DISCHARGED battery ('Pocketfone' switched off) are as follows:—

Battery Type	Capacity	Time to Full Charge
Standard	500mAh	14 hrs
High Capacity	800mAh	24 hrs

*Note: To avoid apparent loss of capacity due to 'memory effect', batteries which are lightly used will benefit from a complete discharge followed by a full re-charge at least once a month.*

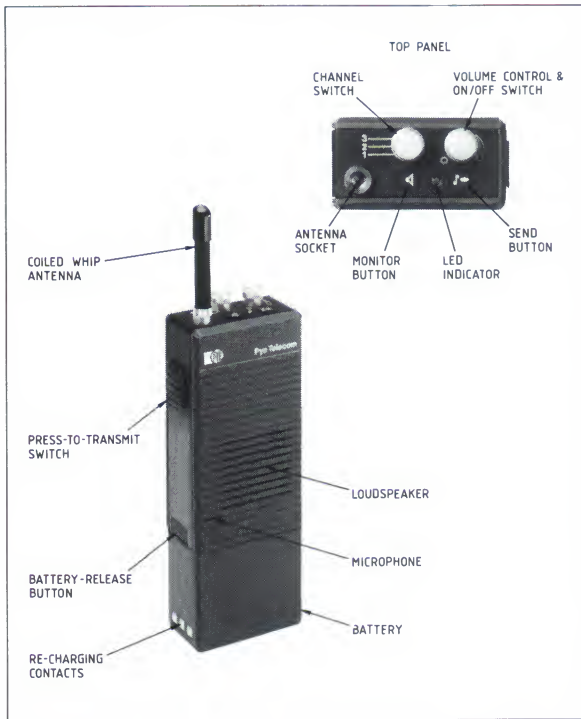
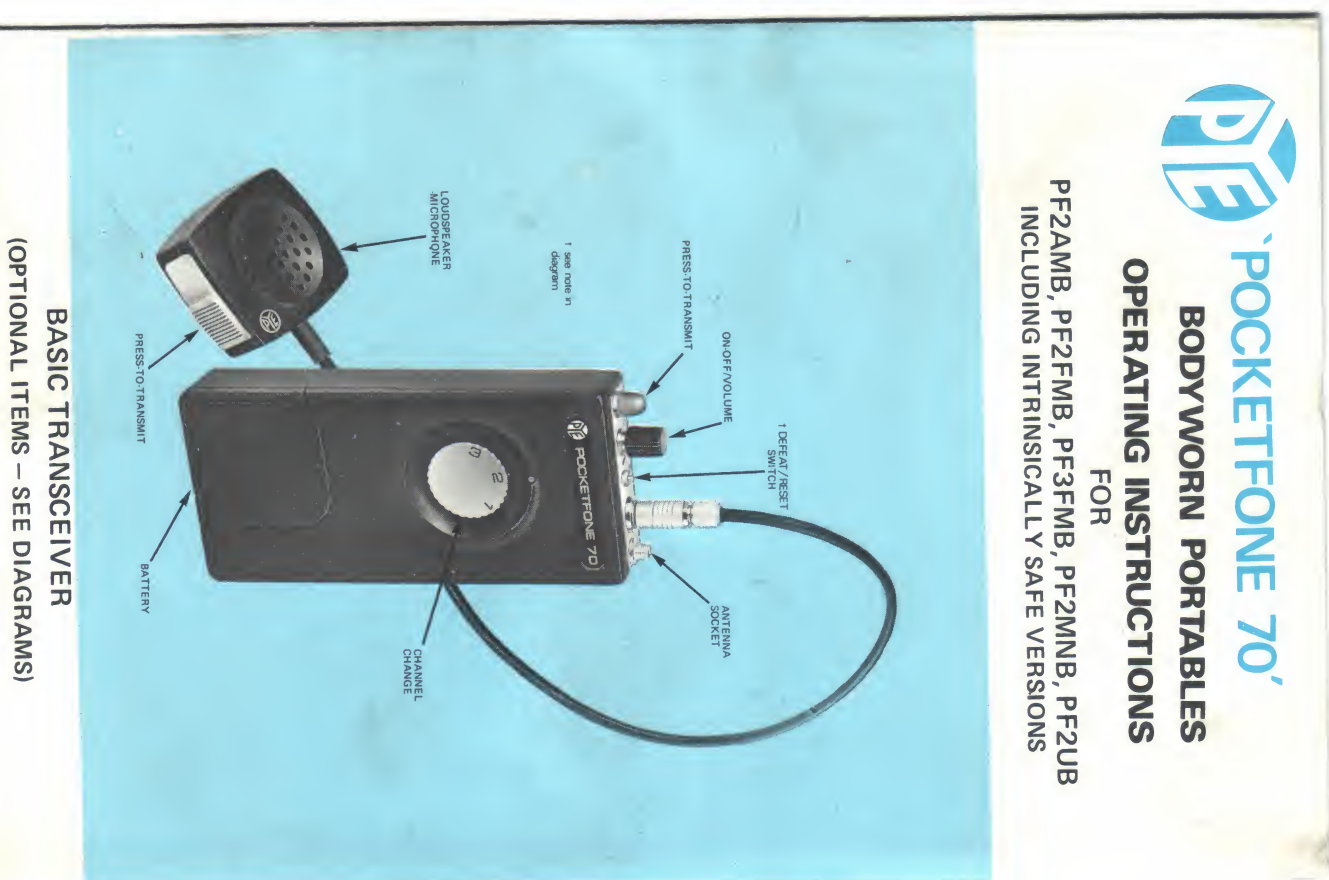


Figure 1

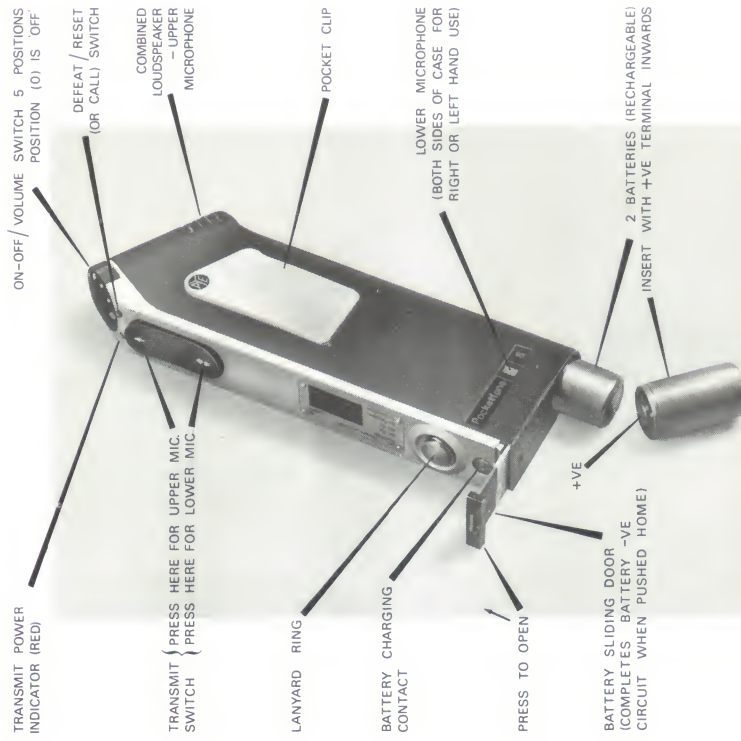
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Pye Telecommunications Limited Cambridge England  
Printed in England © 1983 Issue 2 July 1984 TP981



Pyecall: On completion of a communication press the defeat button to reset the selective call circuit.

Single Tone Encoder: For this facility the 'defeat' button becomes a 'Call' button. Press the button for approximately 3 seconds simultaneously with Transmit switch to activate the base station facility (e.g. talkthrough).



## CONTROLS, INDICATORS & BATTERIES



For quiet backgrounds use upper microphone. Set in breast pocket. Use pocket clip to secure the set.



For noisy backgrounds operate as a telephone handset, using lower microphone.

Note. Lanyard secured in buttonhole.



When transmitting, to obtain maximum radiation, face the receiving station, hold set as high as possible, and use lower microphone.

Note. Lanyard secured to wrist.

## MODES OF OPERATION



# Standard abbreviations

# Examples of procedure

<b>TO</b>	One station to another.
<b>CALLING</b>	One station calling another.
<b>OVER</b>	Message finished awaiting immediate reply. To be given every time you finish speaking.
<b>GO AHEAD</b>	Go ahead and pass your message.
<b>STAND BY</b>	Stand by until called.
<b>WAIT</b>	Wait till air is clear, you are interrupting.
<b>OUT</b>	Exchange of messages completed—no reply expected. Other stations can now call.
<b>OFF</b>	To be given when switching set off.
<b>ROGER</b>	Message received and understood.
<b>WILCO</b>	Will carry out instruction.
<b>REPEAT</b>	Repeat last message.
<b>CHECK</b>	Read back last message.
<b>E.T.A.</b>	Estimated time of arrival.
<b>E.T.D.</b>	Estimated time of departure.

## TO CALL

First make sure the air is clear then call ONCE only using full Call Signs and always giving your own call sign LAST.

e.g. If PYE ALPHA wants to call PYE CONTROL — 'PYE CONTROL, PYE CONTROL FROM PYE ALPHA OVER.'

Pause to give operator time to reply, if no reply, repeat once. If call is accepted then — e.g. 'PYE ALPHA FROM PYE CONTROL GO AHEAD OVER.' If other Station reports 'WAIT' or 'PYE ALPHA STAND BY', wait until called.

## MESSAGES

Be as brief as possible using abbreviations and codes, ending each time with 'OVER'.

1. e.g. 'PYE CONTROL FROM PYE ALPHA JOB 618 COMPLETED ANY MESSAGE OVER.'
2. e.g. 'PYE BRAVO FROM PYE CONTROL PHONE NORTH 5392 IMMEDIATELY OVER.'
3. e.g. Control with a message that a customer code number WEST 71, requires urgent service and wants to know when an Engineer will arrive would be given as — 'PYE CHARLIE FROM PYE CONTROL WEST 71 AS SOON AS POSSIBLE E.T.A. OVER.'

## RECEPTION/TRANSMISSION CONDITIONS

If difficulty is experienced due to screening in heavily built up areas, normal communications can usually be restored by moving your position a distance of a few feet. If inside a building try moving close to a window facing the direction of the incoming signal. Remember also that height can improve performance.

## PROCEDURE

All messages should be clear and concise using simple, clear language. Avoid using code phrases and operational slang whenever possible. The phonetic alphabet below is recommended when it is necessary to spell out words.

### phonetic alphabet

A — ALPHA	J — JULIET	S — SIERRA
B — BRAVO	K — KILO	T — TANGO
C — CHARLIE	L — LIMA	U — UNIFORM
D — DELTA	M — MIKE	V — VICTOR
E — ECHO	N — NOVEMBER	W — WHISKEY
F — FOXTROT	O — OSCAR	X — X-RAY
G — GOLF	P — PAPA	Y — YANKEE
H — HOTEL	Q — QUEBEC	Z — ZULU
I — INDIA	R — ROMEO	

## INTRINSICALLY SAFE SETS — PRECAUTIONS

These sets are specially designed for use in inflammable and explosive atmospheres to British Standard 1259 and are labelled accordingly.

### WARNING

- The case of the transceiver must not be opened except in a safe area.
- The battery must not be removed or charged except in a safe area.
- Only Pye battery Part No. FBO1318 (marked on reverse face of battery) is safe for use in these sets.

**Pye Telecommunications Ltd. Cambridge England**

Publication Ref. No.

TP901

Issue 1

# Miniature Walkie-Talkie

*Self-contained Radio Telephone for*

*Operation in the V.H.F. Band 60-100 Mc/s*

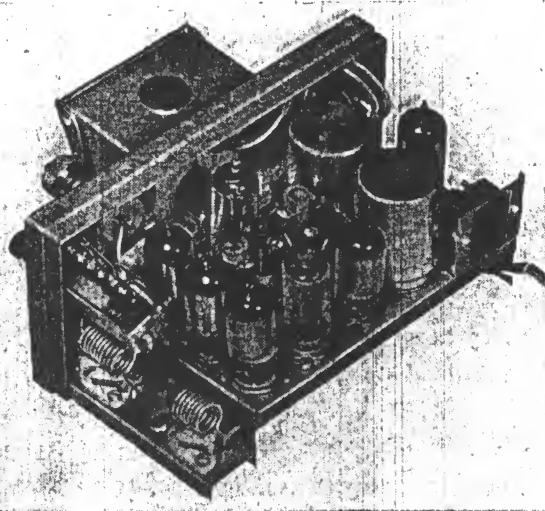
*Pye miniature walkie-talkie. The combined transmitter-receiver occupies the top part and the batteries the bottom part of the container.*



A NEW walkie-talkie which is claimed to be much smaller, considerably lighter, more economical in operation and cheaper than other equipments of this kind has been introduced by Pye Telecommunications of Cambridge. Incidentally, the description "walkie-talkie" may not be very elegant, but it does manage to describe in the fewest possible words the exact nature and function of the apparatus. For the benefit of those who may like a more precise definition, this type of equipment can be described as a self-contained portable radio telephone transmitter-receiver capable of being carried by one person and operated while on the move. So there is something to be said in defence of "walkie-talkie."

The new Pye equipment, which has the type number PTC120, is built into a case measuring  $9\frac{1}{2}$  in high,  $6\frac{1}{2}$  in wide and  $3\frac{1}{4}$  in deep and is designed to be carried on the chest like the Service-type gas mask used in the late war. The set complete with batteries weighs  $8\frac{1}{2}$  lb.

*Chassis of Pye's new walkie-talkie. It contains six valves and the use of miniature parts throughout has enabled the size to be reduced to a minimum, yet all parts are very accessible.*



Convenience of operation has been studied carefully, for example, the microphone is fitted on top of the case at an angle that brings it close to the mouth by bending the head forward slightly. When not in use the microphone, which is a G.P.O.-pattern carbon type, is protected by a snap-down lid. There are two controls only, one is an on-off switch, the other a send-receive switch, the latter being the push-to-talk variety. A single earpiece miniature telephone fixed to a light metal headband is employed, thus the hands are left entirely free except when actually transmitting.

It is most unfortunate that full details of the circuit cannot be given, as it is quite unorthodox and includes a number of very interesting features, but it can be said that six valves only are used in the whole equipment. There is one germanium crystal and two quartz crystals in miniature valve envelopes, one for the transmitter and one for the receiver. The equipment operates in the v.h.f. band of 60-100 Mc/s, using one or two spot frequencies as required. For example, send and receive can be on a common frequency or a different frequency can be used for each, hence the provision of two crystals.

The receiver is basically a superheterodyne with one r.f. amplifier, crystal-stabilized local oscillator (after frequency multiplication, of course), mixer, i.f. stage and audio amplifier. Two valves only are used in the transmitter; one is a crystal oscillator and combined frequency multiplier, the other functions as a frequency doubler and power output stage. Miniature valves are used throughout. The r.f. power output of the transmitter is 0.1 watt and it is amplitude modulated, the audio stage in the receiver being used for this purpose.

Power for the set is supplied by dry batteries: the l.t. has a life of about 15 hr intermittent operation and the h.t. about 75 hr.

It is difficult to assess the range of portable equipment of this kind as it depends so much on the conditions of operation. The minimum distance covered would be between two walkie-talkies, but one to two miles should be obtained under reasonably favourable conditions. With both equipments located on high ground and no obstructions between them the range of operation should be the optical path; on the other hand, in built-up areas the range may drop to a few hundred yards only.

Greater ranges will be obtained under all conditions



between walkie-talkie and a mobile equipment in a vehicle and still greater between walkie-talkie and a fixed station.

The receiver and transmitter are assembled on a single chassis which occupies the top half of the container. The battery compartment is below and the two are held together by a snap-fastener on each side.

The small number of valves employed makes a reasonably simple layout possible and, as the illustration of the chassis shows, all parts appear to be, and in fact are, quite accessible. The underside is equally free from complication and it has been possible to arrange for its manufacture on a production line basis in much the same way as ordinary broadcast sets are produced. It is a creditable achievement that a v.h.f. equipment for 100-Mc/s operation can be produced in this way and without the need for highly skilled workers.

The chassis view shows most of the principal features of the equipment; for example, the send-

receive changeover switch is seen on the left with the transmitter and receiver aerial circuits mounted on the small sub-chassis immediately below. The transmitter output circuit is nearer the camera and just above and in line with it along the bottom edge of the chassis (the cover plate with the microphone housing is, of course, the top when the chassis is fitted in its case) are the two transmitter valves with the quartz crystal mounted in a miniature valve envelope between them. On the extreme right and behind the two cylindrical cases, which incidentally house microphone and modulation transformers, is the audio-output-valve-cum-modulator. The socket on the right-hand edge of the chassis is for monitoring the various stages. The connector for the quarter-wave rod aerial can be seen on the left of the microphone housing when viewed from this angle. It is mounted on a polythene feed-through insulator the lead from which can be seen connected to the nearby changeover switch.

## Cylindrical Chassis

### *Better Spacing of Components and Reduced Overall Size*

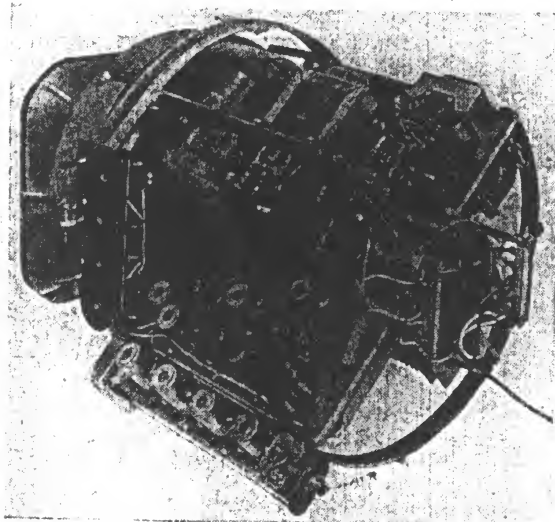
THE baseboard-and-panel form of construction began in the earliest days of radio and has been the main influence in chassis design ever since. For some applications it still cannot be bettered, but fundamentally it does not lend itself very well to the modern demands of miniaturization and space saving; components tend to be clustered on two surfaces only, so that when the chassis is put in a box or cabinet a considerable amount of space remains unused. In other words, a better distribution of the same components would reduce the overall size of the equipment.

Modern trends, therefore, make it necessary to depart from the old formula and go in for new methods of construction making fuller use of the avail-

able space. One recent example is the almost cylindrical chassis in which Murphy embody their V200 table-model television receiver. It illustrates very well the art of getting into a pint pot not a quart but simply a pint—and perhaps in more ways than one, for the design is very reminiscent of aircraft equipments which have to be “potted” for pressurization purposes. The receiver is actually split into four separate sub-chassis and these are arranged radially around the neck of the cathode ray tube, in a space that is not often utilized because of its awkward shape; thus the diameter of the chassis is not very much greater than that of the tube face. A smaller cabinet than normally to be expected has been made possible in this way, and it is claimed that the arrangement gives better spacing between components and easy access for servicing. Another point is that the chassis can be rolled over conveniently on the servicing bench, and the metal loops prevent the parts from getting damaged in the process.

The four radial sub-chassis carry the receiver, the frame time-base, the line time-base and the e.h.t. transformer, but there is also a detachable r.f. unit (bottom left of picture) on the outside of the metal hoops. This external unit is actually Murphy's solution to the problem of the different television channels; the receiver proper remains standard for all parts of the country but a separate r.f. unit is available for each frequency. It can be changed easily through the bottom or the back of the set.

*Showing how the four sub-chassis are arranged radially around the neck of the cathode ray tube.*



### **“How to Choose a Valve”**

**Correction.**—On page 222 (June issue) the expression in the first column for second harmonic distortion should be

$$\frac{Be^2}{2g_m e} \cdot 100\% = \frac{B}{2g_m} \cdot e \cdot 100\%$$

In the following line, “... as B is the slope ...” should read “... as 2B is the slope ...”



## PROVIDE FIRE SERVICES WITH CONSTANT CONTACT

Pye radiotelephone systems are specified  
by Fire Brigades all over the world.

Pye Telecommunications are the world's  
largest exporter and Europe's biggest  
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MR 27



and **Now-**  
*a Fully Transistorised*  
*Walkie-Talkie!*  
 the **PYE** **Bantam**  
 TWO-WAY RADIOTELEPHONE



*Once again in  
 the tradition of  
 the outstanding  
 Cambridge and  
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 telephones, Pye  
 have produced the  
 Bantam, a brilliant  
 fully transistorised  
 Walkie-Talkie.*

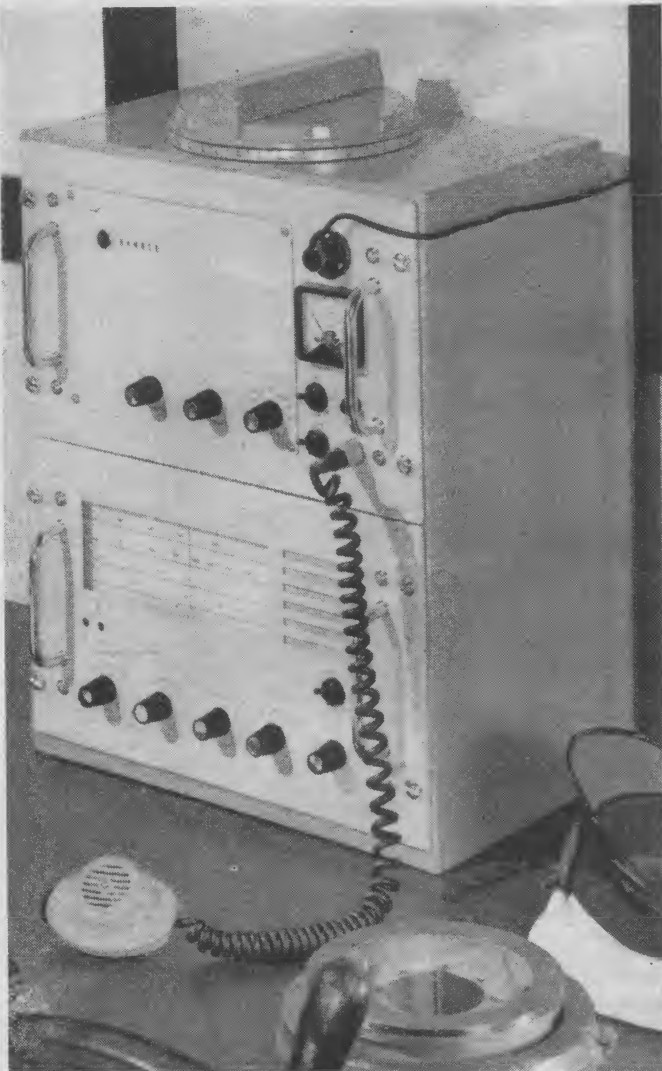
- Fully transistorised Transmitter and Receiver
- Long endurance with Rechargeable or Dry Batteries
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9WW-015 FOR FURTHER DETAILS.

# 3 EXCITING ADDITIONS TO THE MARINE RANGE



A new transistorised Pye marine radiotelephone and two invaluable aids to navigation



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Marine Division  
P.O. Box 18  
Cambridge

## THE PYE 'HAMBLE' Transistor Radio Telephone

- The first of its kind to receive full G.P.O. approval.
- Extremely economical on batteries.
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- Robust and reliable.

PRICE TO BE ANNOUNCED

## THE PYE 'MEDWAY' Echo Sounder

- Offers a dual range—up to 50 feet or 50 fathoms at the touch of a switch.
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- Accurate to  $\pm 3\%$  or 6" (whichever is the greater).
- Minimum error to angle of heel.
- New 'BRIGHT-LITE' indicator for easy reading. PRICE 39 GNS.

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- Fully portable and battery operated.
- Built-in Visual NULL meter.
- Covers Beacon, Consol, Shipping and Broadcast Wavebands.
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See the whole range on **Stand UF18** at the National Boat Show




**V.H.F.**

*all along the line*


*Pye V.H.F. Radio-Telephone equipment  
in use in a locomotive cab.*

Railway systems the world over are now discovering the many advantages to be obtained from radio communication between locomotives and signal boxes, and end-to-end train communication similar to the American systems. Suitable for main-line and yard work, Pye V.H.F. AM and FM Radio-Telephones are currently being supplied to British and Overseas railways, and provide the means to pass accurate, immediate information to operators, thus achieving peak efficiency, greater safety and smoother running. For maximum safety, signals should always control actual movements. Operation in yards and engineering works is considerably simplified and more efficiently conducted by the use of V.H.F. Radio-Telephones. Pye Telecommunications Ltd., will be pleased to advise on any problem or scheme.


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ENGLAND

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# **RADIOTELEPHONES INCREASE AIRFIELD EFFICIENCY & CAPACITY**



A TWA Constellation fills the background as a Trans-World engineer contacts Tarmac Control on his Reporter.

"Aircraft ready to receive passengers" radios a BOAC officer from the aircraft steps to his Duty Room.



Pan American Engineer Laurie Lightfoot has a technical query for his maintenance hangar.



Maintenance, fuelling, towing, provisioning, passenger marshalling and all the mobile services of a modern airfield can be speeded up by the use of Pye Radiotelephones. These tough, reliable sets are easily mounted on tractors, tankers and trucks, giving instant communication with them on any part of the airfield. Pye Engineers can advise you how to use radiotelephones on your airfield. Just write to the address below!



**Telecommunications**

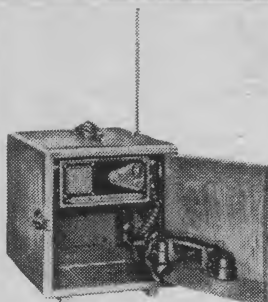
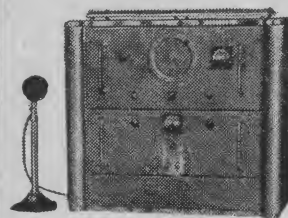
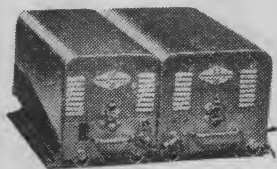
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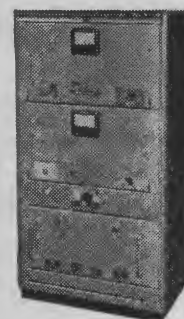


## the right move . . .

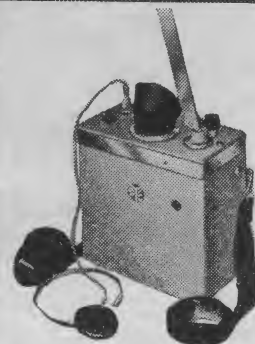
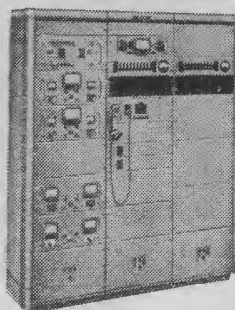
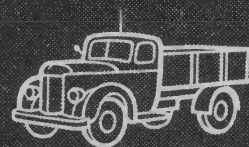
In more than fifty countries Pye radio-telephones are indicating the right move. The next step, great or small, in divers undertakings.

In civil engineering immediate direct communications are vital. The deployment of resources to the fullest advantage demands contact. Contact swift and sure. Contact at speeds to match the action required.

Wherever men and machines are on the move Pye V.H.F. Radio-telephones will promote speed and efficiency.



**PYE**  
**Telecommunications**  
CAMBRIDGE | ENGLAND





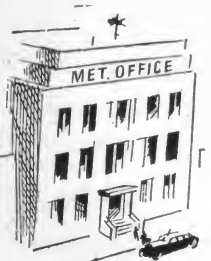
# Radiophone

## SAVES LIVES

JULY, 1953

"The Motor Boat  
& Yachting" mag.

37



### The dolphin

RADIO-TELEPHONE

*keeps you in the picture!*



"Dolphin" PTC 110  
Price 95 Gns.

"Dolphin" Consol PTC 110B  
Price 120 Gns.

including 4 transmitter crystals

The Pye "Dolphin" fitted to *your* craft will enable you to telephone ashore to any number on the G.P.O. system. Giving good coverage of all maritime R/T frequencies this compact equipment will receive medium-wave broadcasts, including gale warnings, while the version with Consol facilities also covers the long waveband.

Our own engineers can fit either version at any port in the country. Write *today* for full technical information on these models.



Overseas Enquiries to:  
PYE LTD.,  
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ENGLAND.

REES MACE MARINE LIMITED, 11 HINDE ST., LONDON, W.1 • Tel: WELbeck 7961

**L**ARGE numbers of Ambulance, Fire, and Police Services throughout the country are equipped with Pye *Radiophone* to help them in their vital task of safeguarding the public, and more are rapidly being installed. If your local Ambulances, Fire-Engines, Police Cars, or Taxis are fitted with two-way radio, it is two to one that the transmitter-receiver is a Pye *Radiophone* made by the Telecommunications Division of Pye Ltd., for we have supplied over two thirds of the mobile communications equipment used today in Britain.

**I**F you are choosing a new radio set or a TV receiver for your home, and would like your set to be designed to the same high standards as the Pye *Radiophone* approved by so many of our Ambulance, Fire and Police Chiefs, you should see the Pye set that best suits your needs. Visit your nearest Pye agent. He will be glad to demonstrate it to you without putting you under any obligation.

P Y E L I M I T E D , R A D I O W O R K S , C A M B R I D G E



# Pye Wireless Set 62



## TYPE WS 62

The Pye Wireless Set 62 is a compact h.f. radio-telephone providing continuous tuning over the h.f. frequency range from 1.6 Mc/s to 10.0 Mc/s in two bands.

It is used by the British Army and by many other military and civil authorities throughout the world. The set has been subjected to rigorous climatic and durability tests and has proved thoroughly reliable on active operations.

The "62" set was originally fitted with a vibrator power supply. This has been replaced by a fully transistorised power supply giving substantial reduction in battery drain and improved reliability. For example, the current required on 'R/T Transmit' has been reduced from 4.6 amps. to 2.7 amps.

The transmitter may be switched for either crystal control or master oscillator operation. When using the master oscillator, the transmitter operates on the frequency of the signal being received. Tuning can be preset to lock in two flick-frequency positions so that immediate choice of either frequency may be made. Crystal control of one pre-determined operating frequency can be used if required.

## FEATURES

- Field-tested reliability
- Transistorised PSU for reduced battery drain
- Flick selection of two frequencies
- Used by the British Army
- Voice and C.W. operation



**GENERAL****Frequency Range**

The overall frequency range of 1.6 to 10.0 Mc/s is covered in two bands, 1.6 to 4.0 Mc/s and 4.0 to 10.0 Mc/s. The tuning range is dependent, however, on the length of aerial used. It should be noted that above 8.0 Mc/s there is a slightly reduced transmitter output on both M.O. and XTAL whilst at the same time the frequency accuracy is marginally below that from 1.6 to 8.0 Mc/s

**Working Range**

This varies with the length of aerial used. Using a 14 ft. aerial, the approximate ranges under good conditions are:—

Stationary C.W. 25 miles R/T 15 miles.  
C.W. 20 miles R/T 11 miles.

**Power Supply**

12V 14 a.h. accumulator, man-pack.  
12V 22 a.h. animal/vehicle station.  
12V 75 a.h. ground station.

**Current Consumption**

							Average Current	Approx. no. of working hrs. for 12 volt battery		
								14a.h.	22a.h.	75a.h.
Transmit R/T	..	..	..	..	..	..	2.7	5.0	8.0	27.0
Transmit C.W.	..	..	..	..	..	..	2.9	4.5	7.5	25.0
Receive (ALL ON)	..	..	..	..	..	..	1.2	8.5	18.0	60.0
Standby	..	..	..	..	..	..	2.12	6.25	10.0	35.0

**Dimensions**

20 $\frac{1}{4}$  in. long  $\times$  10 $\frac{1}{4}$  in. high  $\times$  12 $\frac{3}{4}$  in. deep (51.5  $\times$  27  $\times$  32 cm).

**Weight**

30 lb (13.5 kg).

**RECEIVER****Overall Sensitivity**

'L.F.' band: not worse than 3 $\mu$ V for 50mW output  
'H.F.' band: not worse than 6 $\mu$ V for 50mW output

**Adjacent Channel Selectivity**

Between 5 and 8 kc/s wide at -6dB. Average slope between -6 and -6dB not less than 5.8dB/kc

**Signal/Noise Ratio**

At least 20dB for 3 $\mu$ V input modulated 30% at 400 cycles.

**A.V.C. Characteristic**

Less than 14dB change in input from 50 $\mu$ V to 100mV.

**Audio Output**

Not less than 200mW at 1 kc/s.

**TRANSMITTER****R.F. Power Output**

C.W. 0.78 to 1.1 watts depending on frequency.  
R/T 0.44 to 0.84 watts depending on frequency.

**Modulator Frequency Response**

Within +6dB and -3dB of the response at 1000 cycles for the frequency range 400-3000 cycles.

**Frequency Accuracy**

Within 1 kc/s of the incoming signal when adjusted to zero beat on receive.

*Specification details subject to change without notice.*

PYE TELECOMMUNICATIONS LTD . CAMBRIDGE . ENGLAND

Printed in England 1063/1/5M



# Pye 28 Channel F.M. V.H.F. Marine Radiotelephone



## TYPE PTC 8306

The Pye PTC 8306 is a marine radiotelephone providing voice communication between ships or with port authorities operating according to the recommendations of the Radio Regulations Geneva 1959. The equipment is approved and used by the British Royal Navy and meets the British Post Office marine specification.

It provides nine single frequency simplex channels, 17 duplex channels and two guard channels, a total of 28 channels, all in the International marine v.h.f. frequency band, from 156.05 to 162.0 Mc/s.

A feature is the channel 16 reversion switch — which automatically returns the equipment to the calling and safety channel when the handset is replaced on the hook-rest.

The transmitter r.f. output power which is normally 20 watts can be switched to  $\frac{1}{2}$  watt for short range working or where this requirement is mandatory.

The transmitter and receiver are mounted on separate chassis which are hinged to allow for easy access and are housed in a cabinet suitable for shelf or bulkhead mounting. A meter and multiway switch are fitted in the cabinet to enable periodic operating and performance checks to be carried out.

A weatherproof remote control unit is available which enables the main equipment to be located in any convenient position up to 200 ft. from the control point at the bridge or wheelhouse. A second remote control unit may be added if required.

## FEATURES

- Crystal Controlled Channels
- 20 Watts R.F. Output
- Approved by British Post Office and Admiralty
- Simplex and Duplex Operation
- Compact, Rugged Construction
- Remote Control Available
- Automatic Reversion to Safety Channel
- Built-in test meter
- Reliable operation in all climates



## GENERAL

<b>Operation</b>	F3 Telephony Nine channels single frequency simplex and 15 channels duplex (+2 guard channels (not used)).
<b>Frequency Range</b>	<b>Receiver</b> Simplex 156.3 – 156.8 Mc/s. Duplex 160.6 – 162.0 Mc/s. <b>Transmitter</b> 156.0 – 157.4 Mc/s.
<b>Power Supply</b>	100–150 volts and 190–240 volts a.c. 40–60 c/s.
<b>Power Consumption</b>	Receive: 150 watts. Transmit (high power): 265 watts. Transmit (low power): 202 watts.
<b>Dimensions</b>	<b>Main Unit (including resilient mounts)</b> 22 $\frac{1}{4}$ in. high $\times$ 20 $\frac{3}{4}$ in. wide $\times$ 14 in. deep (56.5 $\times$ 52.7 $\times$ 35.6 cm). <b>Remote Control Unit</b> 9" high $\times$ 6 $\frac{1}{2}$ " wide $\times$ 3 $\frac{3}{8}$ " deep (22.9 $\times$ 16.5 $\times$ 9.2 cm).
<b>Weight</b>	<b>Main Unit</b> 125 lb (56 kg) approx. <b>Remote Control Unit (including handset)</b> 10.5 lb (4.8 kg).

## RECEIVER

<b>Sensitivity</b>	1 watt output for 1 $\mu$ V p.d. input ( $\pm$ 5 kc/s deviation at 1000 c/s).
<b>Signal-to-noise Ratio</b>	Bandstop filter method:— 20dB for 1 $\mu$ V p.d. input ( $\pm$ 4.5 kc/s deviation at 1000 c/s).
<b>Selectivity</b>	I.F. pass band $\pm$ 12 kc/s at –6dB. Adjacent channel rejection for duplex $\pm$ 11 kc/s simplex. Single signal test –100dB for 20dB quieting. Two signal test –70dB for 3dB degradation of wanted S/N ratio.

<b>Intermediate Frequencies</b>	1st I.F. — 15.301 Mc/s (duplex) or 10.701 M/cs (simplex). 2nd I.F. — 2 Mc/s.
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<b>Frequency Stability</b>	Over the temperature range –10°C to +55°C the total drift from all causes is less than $\pm$ 0.002%.
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<b>Spurious Response Attenuation</b>	Greater than 70dB down.
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<b>Radiation</b>	Less than 20m $\mu$ W into the antenna.
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<b>Audio Frequency Response</b>	–7dB at 300 c/s and –4dB at 3000 c/s with respect to a 6dB per octave de-emphasis curve relative to 1000 c/s.
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<b>Audio Power Output</b>	1 watt for 10% distortion.
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<b>Squelch Sensitivity</b>	Adjustable over the input range of 0.7 $\mu$ V to 1.5 $\mu$ V p.d.
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## TRANSMITTER

<b>R.F. Output</b>	20 watts with separate simplex and duplex antennas. 12 watts with duplexer, which requires only one antenna.
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<b>Spurious and Harmonic Emissions</b>	Less than 2.5 $\mu$ W.
--	------------------------

<b>Frequency Stability</b>	Over the temperature range –10°C to +60°C the total drift from all causes is less than $\pm$ 0.002%.
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<b>Modulation Response</b>	–1dB at 300 c/s and –2dB at 3000 c/s with reference to a 6dB per octave pre-emphasis curve relative to 1000 c/s.
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<b>Modulation Distortion</b>	10% maximum at 70% maximum deviation at 1000 c/s.
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<b>Deviation</b>	Up to a maximum of $\pm$ 15 kc/s by pre-set control.
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*Specification details subject to change without notice.*

PYE TELECOMMUNICATIONS LTD . CAMBRIDGE . ENGLAND

Printed in England 164/2/5M



# PYE 'CAMBRIDGE'

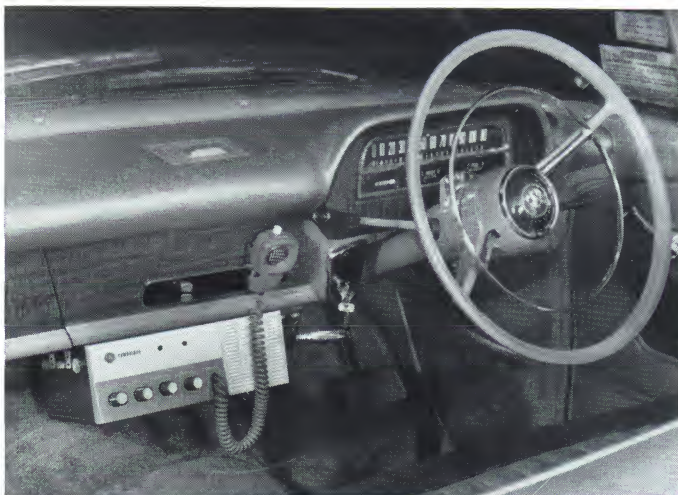
Transistor  
Dash-Mounting  
F.M. Radiotelephone  
(25 - 174 Mc/s)



The F.M. 'Cambridge' has a fully transistorised v.h.f. receiver which meets the stringent performance requirements previously met only by valve receivers. It provides a choice of channel spacings by change of block filters and single or up to 6 channel operation. The battery supply may be 6, 12 or 24 volts.

The attractively styled dust and splashproof case is provided with an adjustable cradle for easy under-the-dash mounting.

A complete installation kit, high quality fist microphone designed for mobile use, and whip aerial are supplied with the equipment in a shock-tested container suitable for air or sea transportation.



- Fully transistorised receiver.
- Receiver battery drain — 100mA.
- 15 watts R.F. output.
- Sealed I.F. block filters.
- Dust-proof and splash-proof.
- Electronic Squelch.
- 25 or 50 kc/s channelling by change of filter.
- 1 to 6 channels as required.
- Printed circuit sub-assemblies.
- Designed for British, American and European specifications.



### GENERAL

<b>Operation</b>	Single or two frequency simplex using phase modulation.
<b>Frequency range</b>	25 — 174 Mc/s.
<b>Channel Spacing</b>	Option of 25/30 or 50/60 kc/s channelling.
<b>Power Supply</b>	12 volts d.c. floating earth supply — permits use with positive or negative earth supplies.
<b>Current Consumption</b>	Receive only: 0.25A (including dial lamp). Standby: 1.5A. Transmit: 5.0A.
<b>Dimensions</b>	12¼" wide × 8½" deep × 4¼" high (31.1 × 21.6 × 10.8 cm.)
<b>Weight</b>	10½ lb (4.8 kg.)
<b>Optional Extras</b>	Six channel operation. Resilient mountings for cradle.

### RECEIVER

<b>Sensitivity</b>	20dB quieting for 0.5 microvolts (p.d.) signal input. 0.5 watts audio output for 1 microvolt (p.d.) signal input.
<b>Signal/Noise/Ratio</b>	12dB SINAD for 0.5 microvolts (p.d.) signal input.
<b>Audio Output</b>	1 watt with less than 5% distortion at 1000 c/s.
<b>Spurious Response Attenuation</b>	Better than 70dB below carrier.
<b>Intermediate Frequencies</b>	1st I.F. — 10.7 Mc/s. 2nd I.F. — 455 kc/s.
<b>Squelch</b>	Noise controlled squelch.

### TRANSMITTER

<b>Power Output</b>	15 watts nominal — varies according to operating frequency.
<b>Spurious Outputs</b>	Each less than 2.5 µW at aerial terminals.
<b>Modulation Response</b>	Between + 1dB and — 3dB of 6dB per octave pre-emphasis characteristic from 300 c/s to 3000 c/s.
<b>Modulation</b>	Adjustable up to 15 kc/s peak deviation.

### PACKING DETAILS

#### CARTON

Size: 18" × 16" × 9"  
(45.7 × 40.6 × 22.8 cm.)  
Weight: 21 lb (9.5 kg.)

#### CONTENTS

Transceiver.  
Cradle.  
Microphone rest.  
Fuseholders and lead assembly.  
Aerial connector.  
Supports.

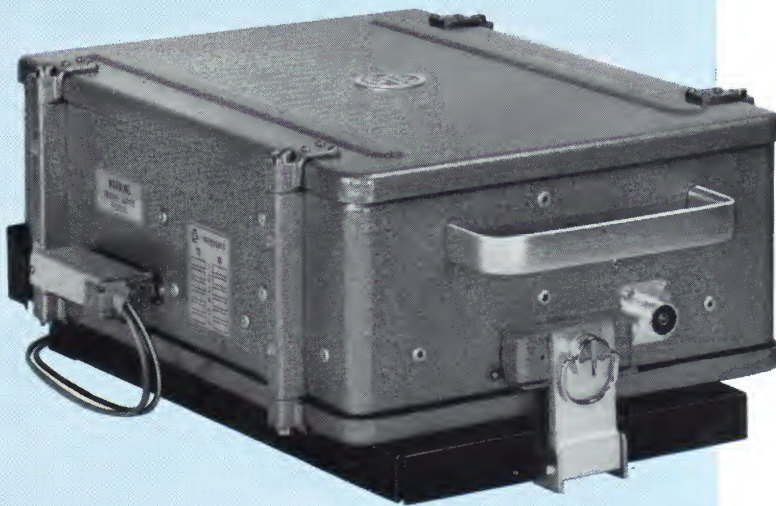
Aerial and lead in  
separate container.



Specification details subject  
to change without notice



# Pye Cambridge Marine Radiotelephone



## FEATURES

- Fully transistorised receiver
- 15 watt RF output
- Low-power switch
- Choice of control units
- Electronic squelch
- Dustproof and splashproof
- Printed circuit sub-assemblies

## TYPE CM, CM1 & CM1A

The Pye Six-channel Cambridge FM Marine Radiotelephone, provides up to six adjacent simplex channels in the international marine or private marine frequency bands. It has been type-approved to British Post Office Specification, TSC 53d and fully meets the requirements of the Radio Regulations, Geneva 1959.

Three types of installation are available. In the first of these, type CM, as illustrated above, the transmitter/receiver unit is controlled by a compact control unit which is particularly suitable for installations where space is restricted. Type CM 1, illustrated overleaf, has a bulkhead mounting waterproof control unit which is combined with the loudspeaker as one simple assembly. The loudspeaker can be detached from the control unit and mounted separately if required. The third alternative, type CM 1A, also shown overleaf, has a rugged bulkhead mounting waterproof control unit with loudspeaker and handset type MC U1. 20 ft. (6.1 m.) of interconnecting cable is normally supplied with the equipment. If longer cables are required, this should be stated when ordering.

The transmitter output of 15 watts can be reduced to approximately  $\frac{1}{2}$  watt for short range working or when this requirement is mandatory.

The receiver is fully transistorised. It draws a very low current, which allows battery-operated equipments to be used for long periods before recharging becomes necessary. If the vessel supply is a.c., a separate power unit, type AC 10 PU is required.





# PYE 'CAMBRIDGE'

## Transistor Motorcycle Mounting F.M. Radiotelephone

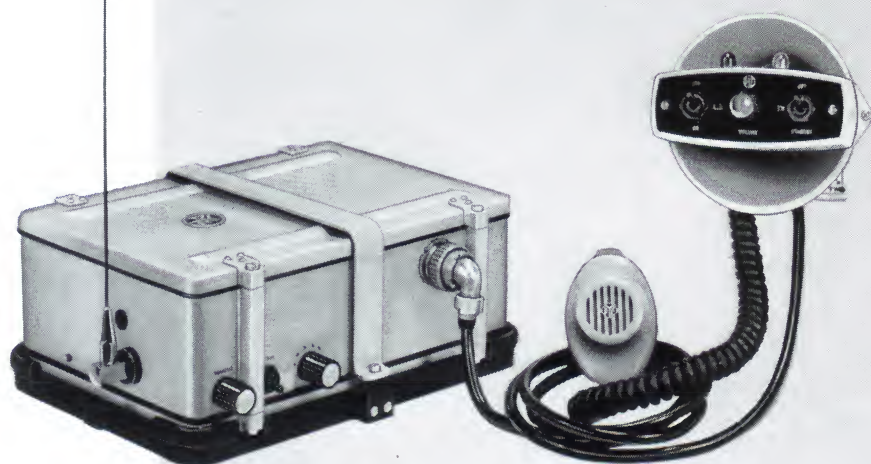
(Type FM 10 MC)

The Pye FM 10 MC is the FM motorcycle version of the 'Cambridge' Transistor Mobile radiotelephone. This outstanding mobile overcomes the special problems associated with motorcycle mounted equipments. The whole installation is completely waterproofed and has been extensively tested to ensure that it operates satisfactorily under the exceptional conditions to which it is subjected in use.

The case is made of heavy gauge aluminium specially strengthened and completely waterproofed. The control panel and loudspeaker, which are combined in one unit, can be mounted in a position convenient to the rider. The control unit is connected to the main unit by multi-core cable fitted with waterproof plug and socket connectors for ease of installation and maintenance.

The all-transistor receiver, which meets the stringent performance requirements previously possible only by using valves, minimises battery drain and allows the receiver to be switched on for long periods without discharging the battery. The use of quick-heat valves in the transmitter eliminates the need for standby and provides a further reduction in battery drain.

The 'Cambridge' motorcycle equipment, which operates from a 6 volt d.c. supply, is available for single frequency or



two-frequency simplex operation in the v.h.f. band from 25-174 Mc/s. It provides a choice of channel spacing by change of block filter and single or up to 6-channel operation.

An electronic squelch is fitted as standard and the waterproof fist microphone and loudspeaker are specially designed to give clear and distinct speech under noisy conditions.

This versatile equipment is supplied packaged in a shock-tested cardboard container suitable for land, sea or air transportation together with a whip aerial specially designed for motorcycle use.



**Fully transistorised receiver.**

**'Receive' battery drain less than 1A.**

**15 watts R.F. output.**

**Quick-heat valves in the transmitter.**

**Sealed I.F. block filters.**

**Completely weatherproof.**

**Electronic squelch.**

**25 or 50 kc/s channelling by change of filter.**

**1 to 6 channels as required.**

**Printed circuit sub-assemblies.**

**Designed to meet British, American and European specifications.**





# Pye 'Westminster' Front Mounted Radiotelephone Type W15 FM

the high quality FM mobile for vehicle front mounting



COMPLETELY SOLID STATE  
15W MINIMUM RF OUTPUT (132–174 MHz);  
12W MINIMUM RF OUTPUT (32.5–101 MHz)  
1–10 CHANNELS WITH SOLID-STATE  
SWITCHING

ILLUMINATED CHANNEL INDICATOR  
ANTI-FLUTTER PROTECTED SQUELCH  
SUITABLE FOR ALL CLIMATES  
MEETS ALL RELEVANT SPECIFICATIONS

This front-mounted mobile is one of the 'Westminster' series of solid-state radiotelephones. It operates in the VHF band from 32.5 – 174 MHz using frequency modulation.

The 'Westminster' fits neatly under the vehicle dashboard and has a separate loudspeaker for mounting in any position convenient to the driver. The equipment is rugged yet lightweight and is both dustproof and splashproof.

With its solid-state, modular construction the 'Westminster' is compact, yet all components are easily accessible to simplify routine testing and maintenance. Silicon transistors are used throughout and all components selected for reliable operation over a wide range of climatic conditions making the 'Westminster' suitable for world-wide use.



# Technical Data

## Type W15 FM

PUBLICATION REF. No. TSP 158/13  
Printed in England February 1976 4M

GENERAL	Operation	Single or two-frequency simplex			
	Modulation	Frequency			
	Frequency Bands	Band A	148—174 MHz	Band E	68 —88 MHz
		Band B	132—156 MHz	Band G	42 —54 MHz.
		Band P	79—101 MHz	Band H	32.5—42 MHz
	Channel Spacing	12.5 kHz (type S), 20 kHz (type R), 25/30 kHz (type V) or 40/50/60 kHz (type N)			
	No. of Channels	1 — 10			
	Switching Bandwidth	±0.2% of mean operating frequency			
	Power Supply	12V (nominal) DC vehicle supply, positive or negative earth. 6/12V or 24/12V operation available with separate converter			
Current Consumption		Receive: 200 mA                      Transmit: 2.5A			
Operating Temperature		From —30°C to +60°C ambient			
Dimensions		Main unit: 228 mm wide x 70 mm high x 203 mm deep (9 x 2.75 x 8 in.)			
		Speaker unit: 146 mm wide x 95 mm high x 67 mm deep (5.75 x 3.75 x 2.6 in.)			
Weight		Main unit: 2.2 kg (5 lb) Speaker unit: 0.54 kg (1 lb 3 oz)			
Finish		Smoke grey with dark blue / light grey panel. Black, cushioned speaker surround			
Optional Extras		(i) 2—10 channels			
		(ii) Telephone handset in place of fist microphone			
		(iii) Converter type W6 PU (6/12V) or type W24 PU (24/12V)			
		(iv) ¼-wave or ⅝-wave antenna			
		(v) Socket for selective call or other facility			
RECEIVER	Sensitivity	20 db quieting for 0.5 µV (p.d.) signal input			
	Signal/Noise Ratio	12 db SINAD for 0.4 µV (p.d.) signal input			
	Audio Output	2.5W with less than 10% distortion			
Spurious Response Attenuation		Better than 85 db below carrier			
Squelch		Electronic. Adjustable threshold setting down to 0.1 µV			
TRANSMITTER	Power Output	15W minimum (132—174 MHz); 12W minimum (32.5—101 MHz)			
Spurious and Harmonic Outputs		Each less than 2.5 µV at antenna socket			
Modulation Response		Between +1 db and —3 db of a 6 db per octave pre-emphasis characteristic from 300 Hz to 3 kHz			
Modulation		Adjustable up to 15 kHz peak deviation			
		<i>Typical figures based on normal operating conditions.</i>			

*Pye policy is one of continuous improvement; therefore the right is reserved to change specifications without notice.*

**NOTE:** Not all frequency bands, variations, options etc are available for every marketing area.

The 'Westminster' is powered from the standard 12V vehicle battery. Small converter units are available to provide for operation from 6V or 24V batteries. These converters each provide a 12V output and permit the 'Westminster' to be readily interchanged between vehicles having different battery voltages. With standby operation eliminated, battery drain is no longer a problem and the equipment is ready for instant operation. Models can be supplied for single channel or up to ten-channel operation with solid-state switching and illuminated channel indicator.

The receiver is fitted with an electronic squelch to suppress background noise in the absence of signals. Features of this circuit are its protection against signal 'flutter' and the elimination of squelch 'tail'. A combination of hermetically-sealed crystal and LC filters gives optimum IF selectivity requiring no adjustment.

As an option, a socket can be fitted to the rear panel for the connection of a facility such as 'Pyecall' selective signalling or Tone Lock, details of which are given in Publications Ref. No. TSP339 and TSP363.



**Pye Telecommunications Limited.**

Cambridge CB5 8PD England Telephone: Cambridge (0223) 61222 Telex: 81166 Cables: PYTELECOM CAMBRIDGE



# Pye 'Westminster' Universal Radiotelephone Type W15 FM



RUGGED AND WEATHERPROOF  
COMPLETELY SOLID STATE  
15W MINIMUM RF OUTPUT (148–174 MHz)  
12W MINIMUM RF OUTPUT (32.5–101 MHz)

The Pye 'Westminster' Universal is a weatherproofed and ruggedised equipment in the 'Westminster' series of solid-state mobile radiotelephones. It is designed for use on a variety of vehicles where the equipment is exposed to the weather or where special problems of dust and vibration exist; with its adaptability the equipment is equally suitable for use on motorcycles or in vehicles such as fork-lift trucks and tractors.

The entire installation is weatherproof and has been thoroughly tested under conditions of transient and regular vibration patterns to ensure that it meets the most rigorous conditions of service.

To provide flexibility in mounting the equipment on different types of vehicle, the main transmitter-receiver unit is connected by

SUITABLE FOR ALL CLIMATES  
1–10 CHANNELS WITH SOLID STATE SWITCHING  
CHOICE OF CONTROL UNITS

multi-way cable to a small control unit. Two types of control unit are available and there is a choice of cable lengths with one. The control unit illustrated above (Type I) is provided with a recess and clip for retaining a telephone handset and is equally suitable for installation in a vehicle cab or on the petrol tank of a motorcycle. The other (Type II) is supplied with a fist microphone and is equipped for handlebar mounting. In motorcycle installations, the main unit can be mounted behind the saddle or in the well of a petrol tank. A typical installation is illustrated overleaf.

 **TELECOM**

# Technical Data

## Type W15 FM

PUBLICATION REF. No. TSP168/6  
Printed in England August 1974 3M

GENERAL	Operation	Single or two frequency simplex	
	Modulation	Frequency	
	Frequency Bands	Band A	148—174 MHz
		Band P	79—101 MHz
		Band E	68— 88 MHz
	Channel Spacing	25/30 kHz or 40/50/60 kHz	
	No. of Channels	1—10. (Standard equipment is for single channel operation)	
	Switching Bandwidth	±0.2% of mean carrier frequency	
	Power Supply	12V DC vehicle supply (6V or 24V suitable with separate converter)	
	Current Consumption	Receive: 200 mA	Transmit: 2.5A
	Operating Temperature Range	—30°C to +60°C ambient	
	Overall Dimensions	Main unit: 279 mm wide x 82 mm high x 229 mm deep (11 x 3¼ x 9 in.)	
		Control unit:	
		Type I:	114 mm wide x 203 mm high x 73 mm deep (4½ x 8 x 2¾ in.)
		Type II:	146 mm wide x 57 mm high x 83 mm deep (5¾ x 2¼ x 3¼ in.)
	Weight	Loudspeaker: 127 mm wide x 76 mm high x 50 mm deep (5 x 3 x 2 in.)	
		Main unit:	4.3 kg (9½ lb)
		Loudspeaker:	0.73 kg (1 lb 10 oz)
	Finish	Control unit:	
		Type I:	1.5 kg (3¼ lb) incl. handset
		Type II:	0.73 kg (1 lb 10 oz) less microphone
	Options	White enamel	
		(i) 2—10 channels	
		(ii) 6V or 24V weatherproof converter	
		(iii) Transceiver cradle with/without antenna and base attachment	
		(iv) Control unit type I with interconnecting cable 250 mm (10 in.), 1.8 m (6 ft) or 5.5 m (18 ft) in length	
		(v) Control unit type II with interconnecting cable 2.75 m (9 ft) in length	
		(vi) Choice of antennas	
	RECEIVER	Sensitivity	20 db quieting for 0.5 µV (p.d.) signal input
		Signal/Noise Ratio	12 db SINAD for 0.4 µV (p.d.) signal input
		Audio Output	2W with less than 10% distortion
		Spurious Response Attenuation	Better than 85 db below carrier
	TRANSMITTER	Squelch	Electronic. Adjustable threshold setting down to 0.1 µV
		Power Output	15W minimum (148—174 MHz); 12W minimum(32.5—101 MHz)
		Spurious and Harmonic Outputs	Each less than 2.5 µW at antenna socket
		Modulation Response	Between +1 db and —3 db of a 6 db per octave pre-emphasis characteristic from 300 Hz to 3 kHz
	Deviation	Adjustable up to 15 kHz peak deviation	
		Typical figures based on normal operating conditions	
		Pye policy is one of continuous improvement, therefore the right is reserved to change specifications without notice	
		NOTE: Not all frequency bands, options etc. are available for all marketing areas	

The small directional loudspeaker, which is suitable for clamping to a handlebar or for bracket mounting, provides sufficient output to enable messages to be heard at a distance from the vehicle. The antenna fitting can be incorporated in the main equipment cradle as illustrated or it can be provided as a separate unit. Other types of antenna can be supplied to suit individual requirements.

Type I control unit is provided with a socket for the connection of a helmet-mounted headset with boom microphone. The loudspeaker can be switched off when not required and messages transmitted and received via the handset or headset. A panel for note recording is incorporated.

The radiotelephone is frequency modulated. There is a choice of channel spacing and single channel or up to 10-channel operation with solid-state channel switching. Silicon transistors are used throughout the equipment.

The receiver is fitted with a pre-set electronic squelch to suppress background noise in the absence of signals. Features of this circuit are its protection against signal flutter and the elimination of squelch 'tail'.

The equipment operates from a standard 12V DC vehicle supply. Special weatherproof converters are available for operation from 6V and 24V batteries.





# Pye 'Motafone' Front Mounted Radiotelephone Type MF 5 AM

single - unit 3 or 6 - channel VHF mobile



ALL SOLID STATE

SMALL, LIGHTWEIGHT SINGLE UNIT

EMBODIES MANY SAFETY FEATURES

EASY TO INSTALL AND SIMPLE TO OPERATE

The Pye 'Motafone' is a compact, front-mounted mobile radiotelephone incorporating the latest design techniques. It provides 3 or 6-channel operation in the VHF band using amplitude modulation.

The radiotelephone is designed with safety in mind. The front panel is padded and there are no projecting knobs. The equipment is styled to blend with the latest car and industrial vehicle interiors and is finished in non-reflecting black.

The single, small lightweight unit fits neatly under the vehicle dashboard and incorporates a high-performance loudspeaker. It is easily installed and, with only two controls, is very simple to operate. A single front-access screw

3 or 6-CHANNEL OPERATION

INTEGRATED MICRO-CIRCUITS –  
EASIER MAINTENANCE

PRE-SET SQUELCH

MEETS BRITISH POST OFFICE  
SPECIFICATIONS

locks the equipment into its universal mounting cradle providing easy interchangeability and maintenance.

The radiotelephone is powered from the standard 12V vehicle supply. A stabilised power supply unit within the equipment isolates it from the adverse effects of voltage variation and there is full protection against reverse polarity connection. Battery drain is very low, the receiver taking only 75 mA. The all-solid-state 'Motafone' needs no warm-up time and is always ready for instant operation.

 **TELECOM**

# Technical Data

PUBLICATION REF. No. TSP112/6  
Printed in England January 1973 5M

## Type MF 5 AM

### GENERAL

<b>Operation</b>	Single or two frequency simplex
<b>Modulation</b>	Amplitude
<b>Frequency Bands</b>	A Band 148–174 MHz Mid Band 138–141 MHz (receiver); 105–108 MHz (transmitter) E Band 68– 88 MHz C Band (Aircraft) 118–136 MHz
<b>Channel Spacing</b>	12.5 kHz ( <i>A, Mid and E Bands</i> ) or 50 kHz ( <i>C Band</i> )
<b>No. of Channels</b>	3 or 6 ( <i>C Band: 3 only</i> )
<b>Switching Bandwidth</b>	±0.2% of mean operating frequency
<b>Operating Temperature Range</b>	–10°C to +50°C ambient ( <i>A, Mid and E Bands</i> ) –30°C to +60°C ambient ( <i>C Band</i> )
<b>Power Supply</b>	12V (nominal) DC vehicle supply, positive or negative ground
<b>Current Consumption</b>	Receive: 75 mA Transmit: 1A approximately
<b>Operator Controls</b>	<i>3-channel version</i> On-off and channel selector switch Volume control Press-to-transmit switch <i>6-channel version</i> On-off and volume control Channel selector switch Press-to-transmit switch
<b>Lamp Indication</b>	Transmitter on (red). <i>C Band only</i>
<b>Dimensions</b>	Width: 203 mm (8 in.) Height: 68 mm (2.7 in.) Depth: 171 mm (6.75 in.)
<b>Weight</b>	1.7 kg (3.75 lb)
<b>Finish</b>	Case: PVC-clad aluminium in non-reflecting black Front panel: Padded ABS plastic safety front in non-reflecting black

### RECEIVER

<b>Sensitivity</b>	1 µV (p.d.) signal input for 500 mW output at 30% modulation with 1 kHz tone
<b>Signal/Noise Ratio</b>	10 db at 0.8 µV (p.d.) signal input at 30% modulation with 1 kHz tone
<b>Spurious Response Attenuation</b>	At least 70 db
<b>Audio Output</b>	1W with less than 10% distortion
<b>Squelch</b>	Electronic. Adjustable threshold pre-set to 0.8 µV (p.d.)

### TRANSMITTER

<b>Power Output</b>	2.5W minimum (at 13.8V D C input)
<b>Spurious Outputs</b>	Each less than 2.5 µW at antenna socket
<b>Modulator Response</b>	Within ±3 db between 300 Hz and 2.5 kHz relative to 1 kHz

*Typical figures based on normal operating conditions*

*Pye policy is one of continuous improvement; therefore the right is reserved to change specifications without notice*

**NOTE:** not all frequency bands, options etc. are available for every marketing area.

The all solid-state construction, incorporating monolithic integrated circuitry, results in fewer components, improved reliability and easier servicing. The high selectivity RF section of the receiver uses helical resonators to provide maximum freedom from interference; the mixer stage uses a field-effect transistor to provide good intermodulation and blocking performance. The single superhet circuit design reduces the number of spurious responses. A sealed quartz crystal filter provides optimum IF selectivity.

The receiver is fitted with an electronic squelch to suppress background noise in the absence of signals. The squelch threshold is pre-set and requires no operator adjustment.

The transmitter employs a rugged, solid-state power output stage giving an RF output of 2.5W. A direct transformerless method of modulation is used.

A socket is provided on the rear of the equipment for the connection of a facility such as selective calling. A transmit indicator lamp is fitted on the aircraft band version.



**Pye Telecommunications Ltd.**

**Cambridge CB5 8PD**

**England**

Telephone: Cambridge (0223) 61222

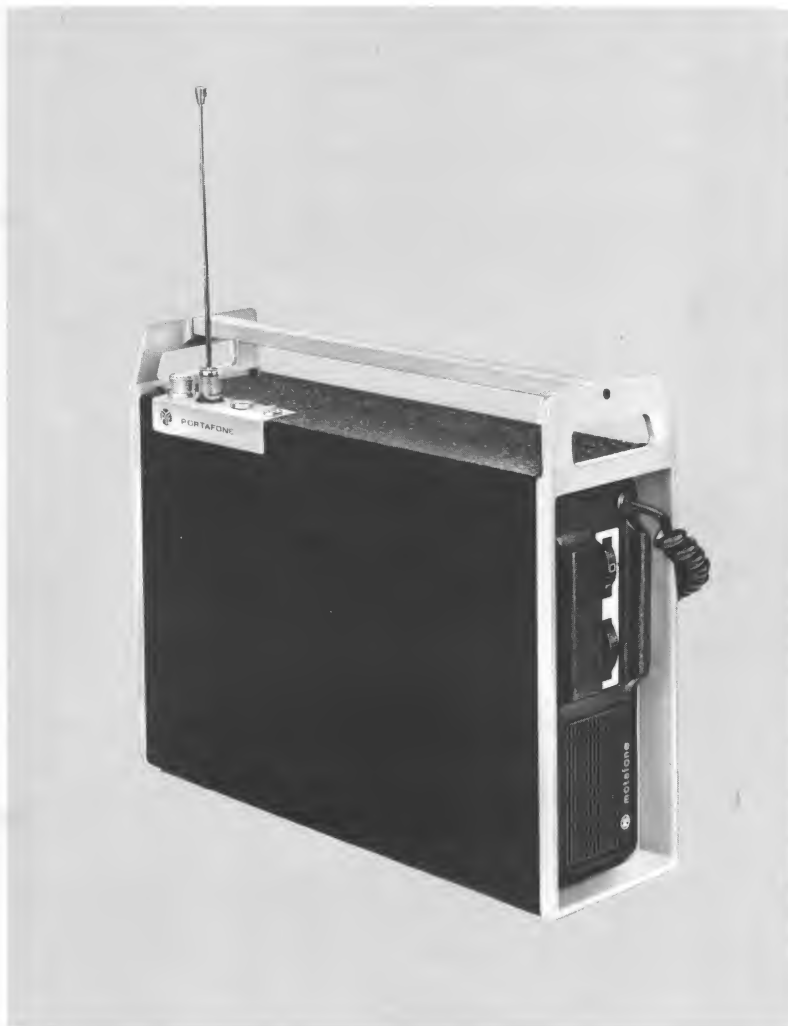
Telex: 81166 (PYETELCOM CAMBG)

Cables: PYETELCOM CAMBRIDGE



# Pye 'Portafone' Type MF 5 AMP

the portable version of the 'Motafone' radiotelephone



Pye 'Motafone' AM mobile radiotelephone is now available in transportable form. The addition of a conversion unit, type P 5 PU, results in the Pye 'Portafone' — a high performance, 3 or 6-channel, battery portable which retains the many features of the mobile equipment.

The 'Portafone' can be operated from either a rechargeable nickel-cadmium battery or from a cassette of dry cells. Both power supply options are available as 'plug-in' units for easy replacement. The rechargeable battery has a capacity of 3 AH, which provides adequate endurance per charge. The dry cell cassette accepts ten 1.5V HP2 or equivalent type high power cells. The equipment is fitted with a meter and associated press-button for checking battery condition.

The equipment can be supplied with either a retractable or fixed whip antenna. Either type is pre-adjusted to match the operating frequency band required, and this should always be quoted when ordering. A separate socket is provided for connecting an external antenna.

The 'Portafone' is ideal for operation inside a vehicle. Both the vehicle antenna and power supply can be easily connected to the unit, providing the portable with standard mobile performance. A diode prevents the internal battery from discharging into the vehicle system, whilst allowing the rechargeable nickel-cadmium battery to be maintained from the vehicle supply.

The connector, which enables the equipment to be powered from an external source, can also be used to recharge the nickel-cadmium battery without removal from the case. Battery charger, type BC2/P, is available for this purpose.

## FEATURES

- 3 or 6-channel operation
- 2.5W minimum RF output
- Long endurance rechargeable battery
- 'In situ' battery charging
- Alternative dry cell cassette available
- Battery check meter
- Telescopic or whip antenna



# Pye`Olympic` Radiotelephone Type M201

a new high quality VHF AM mobile



## Consider these facts...

### A NEW CONCEPT IN CONSTRUCTION

Plug-in modular technology, previously found only in computers, has now been developed to make the Olympic the first mobile radio using plug-in 'cards' for *all* circuit functions.

### RELIABILITY

Rugged, die-cast exterior; integrated circuits; computer tested modules with gold-plated connectors — that's what goes into the Olympic . . . plus the experience of Pye who have been in the business for many years.

### PERFORMANCE

Even *our* engineers cannot change the fundamentals of radio communications: what *we have* done is to optimise all the parameters. Receiver sensitivity, improved AGC, low modulation distortion, fully noise-compensated squelch action, interference suppression — these are some of the things that count. But you must judge for yourself. We will be pleased to demonstrate.

### PYE FIRST AGAIN

The Olympic is the first AM mobile radio with a built-in option slot for selective calling, vehicle identification or Tone Lock (continuous tone controlled squelch system).

### SAFETY

Breakaway mounting safeguards passengers and driver in the event of an accident. Ergonomically designed controls allow the driver to concentrate on his driving. The Olympic front panel is flat — no dangerous projections or sharp corners — and is finished in distraction free, non-reflective black.

*"We don't wish to lose our customers; their safety is our concern."*

### FLEXIBILITY

12 channels for those who need them now — and for those who don't it's nice to know it's a plug-in addition any time. Selective signalling is the tool to optimise systems capability. For the smaller user, there may be no need for this. But what about future expansion? That's easy: the option slot provides for existing or future plug-in signalling modules. A large range of options is available.





## INSTALLATION

Any 12 volt vehicle will do justice to the Olympic; positive earth or negative earth — the Olympic doesn't mind. For 24 volt supplies, any polarity earth or floating, the VR200 voltage regulator is available. The contours of the Olympic blend into the most expensive saloon or the most rugged of trucks with a simple, tamper-proof installation plate.

## EASE OF MAINTENANCE

Just as easy as changing a fuse! Pull out a suspect module and plug in a replacement, return the faulty module to your central service facility. For those who find it difficult to accept this new philosophy, extension connectors (service 'stalks') are available to allow component fault diagnosis in the traditional manner.

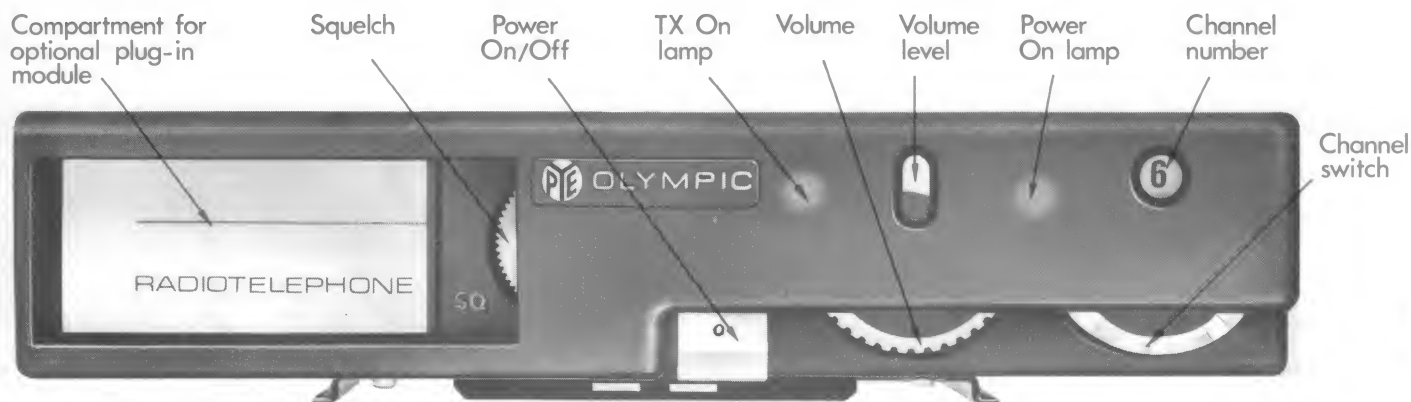
## THE HIDDEN EXTRAS

Polarity protection against incorrect installation. Alternator whine rejection. Improved audio quality. Better intelligibility. All these are built into every Olympic.

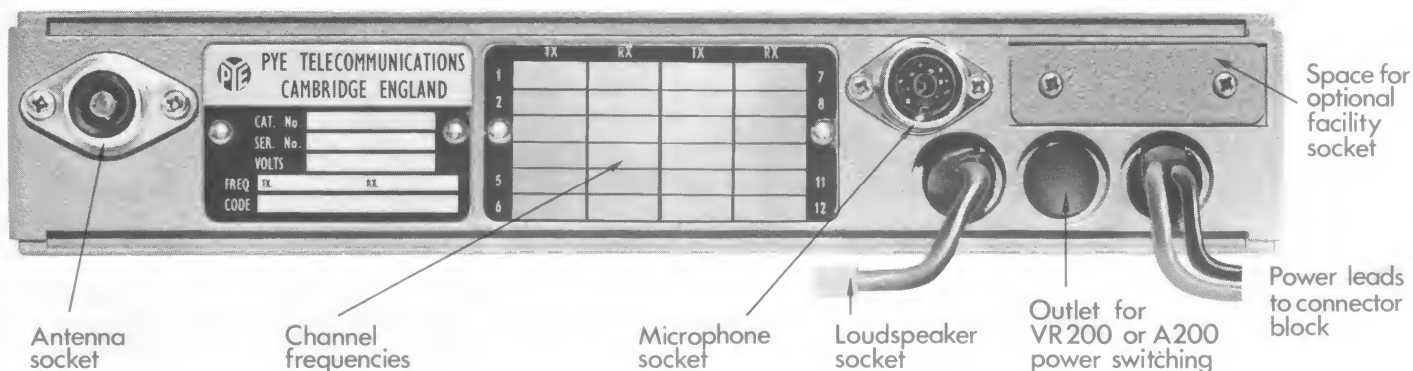


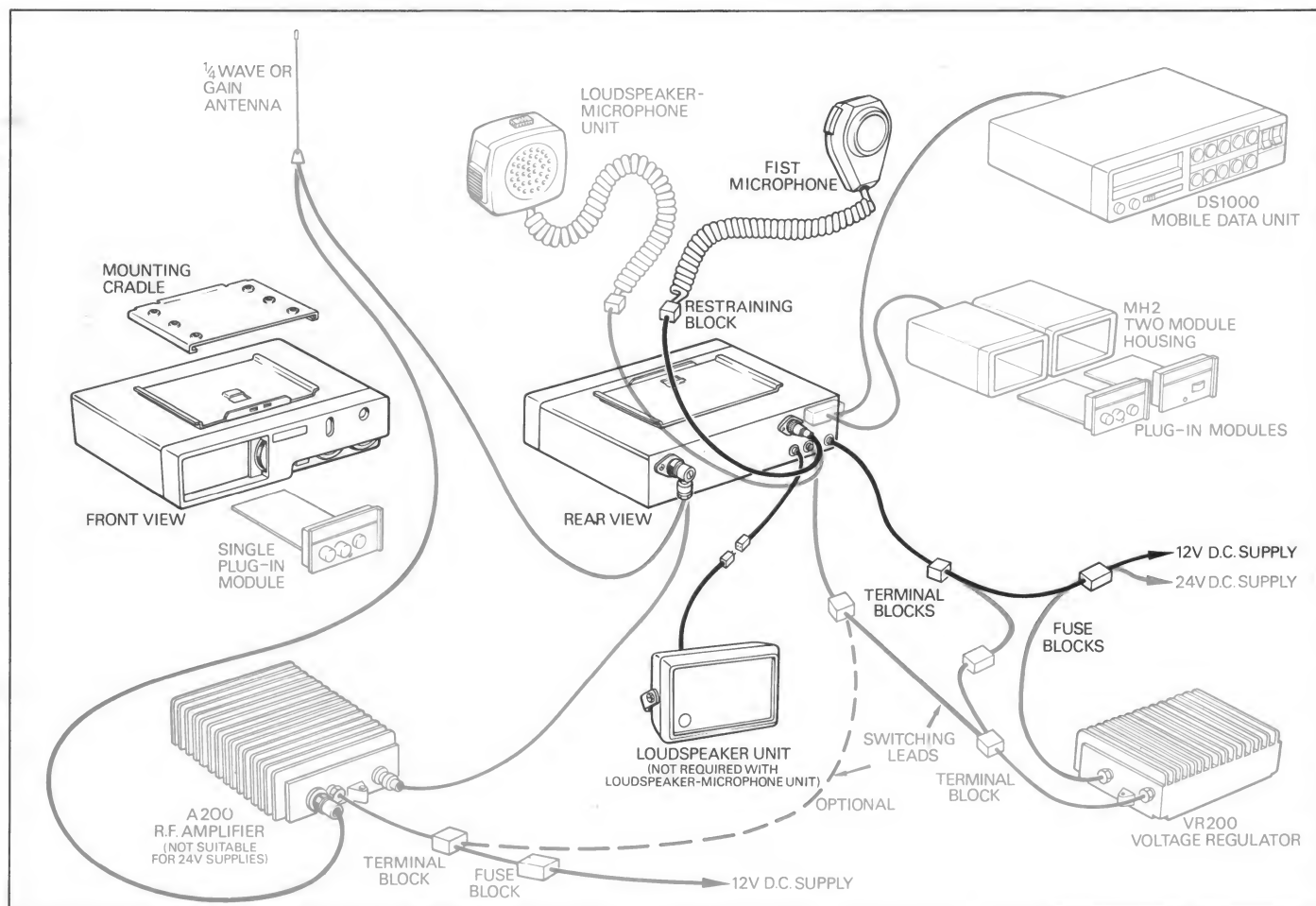
Functional, dependable — the Olympic meets in every way the exacting demands of tomorrow's world.

## CONTROLS



## CONNECTORS





### Loudspeaker-microphone Unit



# Technical Data

## TYPE M201

PUBLICATION REF. No. TSP425/6  
Printed in England May 1976 5M

### GENERAL

<b>Operation</b>	Single or two-frequency simplex			
<b>Modulation</b>	Amplitude			
<b>Frequency Bands</b>	Band A0	148—174 MHz	Band M1	105—108 MHz (transmitter only)
	Band C0	117—137 MHz	Band M2	138—141 MHz (receiver only)
	Band E0	68— 88 MHz	Band P8	96—106 MHz (receiver only)
<b>Channel Spacing</b>	12.5 kHz (type S) or 25 kHz (type V)			
<b>No. of Channels</b>	Single, 6 and 12 channel versions available			
<b>Switching Bandwidth</b>	±0.5% mean operating frequency			
<b>Operational Environment</b>	This equipment is designed for operation from —30°C to +60°C and meets EIA recommendations or national specifications			
<b>Frequency Stability</b>	Standard: ±10 p.p.m. over the temperature range —10°C to +55°C (Alternative stabilities are available to meet climatic and mandatory requirements)			
<b>Power Supply</b>	12V (nominal) DC supply, positive or negative ground. 24V operation available by separate regulator			
<b>Current Consumption</b>	Receive (standby): 250 mA approx.		Transmit: 3A approx.	
<b>Operator Controls</b>	On-off switch		Squelch	
	Volume		Channel selector (6 and 12-channel versions)	
<b>Indicator Lamps</b>	Power on (also illuminates channel selector and volume) Transmit			
<b>Overall Dimensions</b>	<i>Main Unit:</i>	246 mm wide x 64 mm high ( <i>incl. mtg. cradle</i> ) x 185 mm deep (9.7 x 2.5 x 7.3 in.)		
	<i>Speaker Unit:</i>	145 mm wide x 94 mm high x 69 mm deep (5.7 x 3.7 x 2.7 in.)		
<b>Weight</b>	<i>Main Unit:</i>	2.3 kg (5.1 lb)		
	<i>Speaker Unit:</i>	0.55 kg (1.25 lb)		
<b>Finish</b>	<i>Main Unit:</i>	die-cast aluminium finished in smoke grey with black polycarbonate front panel		
	<i>Speaker Unit:</i>	black with safety front		
<b>Optional Extras</b>	(i)	2—12 channels	(v)	Selection of 'Pyecall' modules (see Publication Ref. No. TSP339 for details)
	(ii)	24V regulator	(vi)	Alternative frequency stabilities
	(iii)	25W RF power amplifier (12V DC supplies only)	(vii)	Loudspeaker-microphone unit in place of fist microphone
	(iv)	¼-wave and ⅝-wave antennas	(viii)	Facility socket

### RECEIVER

<b>Input Impedance</b>	50 ohms
<b>Sensitivity</b>	1W for 0.5 µV (p.d.) signal input, at 30% modulation with 1 kHz tone
<b>Signal/Noise Ratio</b>	10 db at 0.6 µV (p.d.) signal input, at 30% modulation with 1 kHz tone
<b>Audio Output</b>	2.5W with less than 10% distortion, at 1 kHz with 30% modulation
<b>Spurious Response Attenuation</b>	At least 85 db. (Image: at least 70 db)
<b>Squelch</b>	Electronic, fully noise compensated. Threshold sensitivity equal to or less than 0.4 µV (pd), with a full 6 db range of adjustment above the threshold level
<b>Automatic Gain Control</b>	The output does not increase by more than 6 db when the input is increased from 0.5 µV to 0.5V (pd).

### TRANSMITTER

<b>Output Impedance</b>	50 ohms
<b>Power Output</b>	Band E0 : 8W minimum
	Other bands : 6W minimum } at 13.8V DC input (25W available with separate power amplifier, except on Band C0)
<b>Spurious Outputs</b>	Each less than 2.5 µW at antenna socket
<b>Modulation Capability</b>	Up to 90%
<b>Modulation Response</b>	Within +1 db and –3 db between 300 Hz and 2.5 kHz relative to 1 kHz

*Typical figures based on normal operating conditions*

*Pyec policy is one of continuous improvement; therefore the right is reserved to change specifications without notice.*

**NOTE:** Not all combinations of frequency bands, options etc. are available for every marketing area.

**Pyec Telecommunications Limited.**

Cambridge CB5 8PD England Telephone: Cambridge (0223) 61222 Telex: 81166 Cables: PYELECTECOM CAMBRIDGE

# Pye 'Dial-in' System for Portables and Mobiles Types DE1/DE2 & RTU4

direct dialling of PAX extensions  
from your personal or vehicle radiotelephone



Pye 'Dial-in' can improve the efficiency of your radiotelephone system as effectively as the advance from manual to automatic exchanges enhanced the usefulness of your internal telephone system. The new system saves time and eliminates operator error by abolishing the need to relay your messages. The fitting of Pye 'Dial-in' is a really worth-while step in the integration of radio and telephone communication systems. The advantages gained for a small outlay per personal or mobile unit greatly increase the overall cost effectiveness of your existing communication network. 'Dial-in' and standard radiotelephone control facilities can be combined in a single scheme.





## ENTIRELY AUTOMATIC

Equipped with 'Dial-in' encoders, users of the bodyworn 'Pocketfone 70' and mobile radiotelephones can make calls to any extension on the private automatic telephone exchange (PAX) at their headquarters.

Encoder type DE1 is used with the bodyworn 'Pocketfone 70' and type DE2 with mobiles. Both incorporate a special dialling key pad which is more suitable for these applications than the conventional rotary type.

## POSITIVE INDICATION OF RADIO CONTACT

A light on the key pad confirms the generation of dialling tones when a key is pressed. A pip tone acknowledgement from the fixed station provides supervisory indication that the station has been seized and dialling may proceed. This is a very important feature in weak reception areas.

## EASY ADD-ON

### Portables

Just plug the DE1 into the loudspeaker/microphone socket of the bodyworn 'Pocketfone 70'.

### Mobiles

Just secure the universal mounting bracket to present the DE2 key pad in the optimum operating position and plug the lead into the mobile facility socket.

### Fixed Station

All that is required is the addition of a radio terminating unit type RTU 4 to interface the fixed station and the telephone exchange.

## ECONOMY OF AIR TIME

Timers are included to limit the duration of calls and to ensure automatic 'clear down' in the event of misuse or weak signal conditions. Periods can be pre-set to suit customer's requirements. Audible warning of impending 'clear down' is given.

This feature helps to improve user discipline and minimizes air time wastage.

## SIMPLE TO USE

### Calls from Portable or Mobile

Press the 'Seize exchange' key (\*) and when acknowledged, follow with the digits of the required

extension number in sequence, noting the pip tone acknowledgement of each digit.

To clear down after conversation press the 'clear' key (#).

### Inter-Portable and/or Mobile (Talkthrough)

Press the talkthrough key (normally 3), to switch the fixed station to talkthrough.

Press the 'clear' key (#) to return the fixed station to normal.

### PAX Extension to Portable or Mobile

Dial the fixed station number from the PAX extension and, on receipt of acknowledgement tone, call and converse with the required portable or mobile using normal RT procedure.

The system is cleared down by operating the 'clear' key (#) on the DE1 or DE2.

Note: Dialling out is also available as a special requirement, and will be available later as standard equipment. Refer to Head Office for details.

### 'Dial-in' plus Radiotelephone Control

'Dial-in' and normal radiotelephone control facilities can both be provided in a single scheme by connecting a compatible Pye control unit to the RTU 4.

## FIXED STATION - DUPLEX OPERATION

The RTU 4 can be fitted at the fixed station or at the telephone exchange. Timing circuits are fitted which can be preset according to requirements.

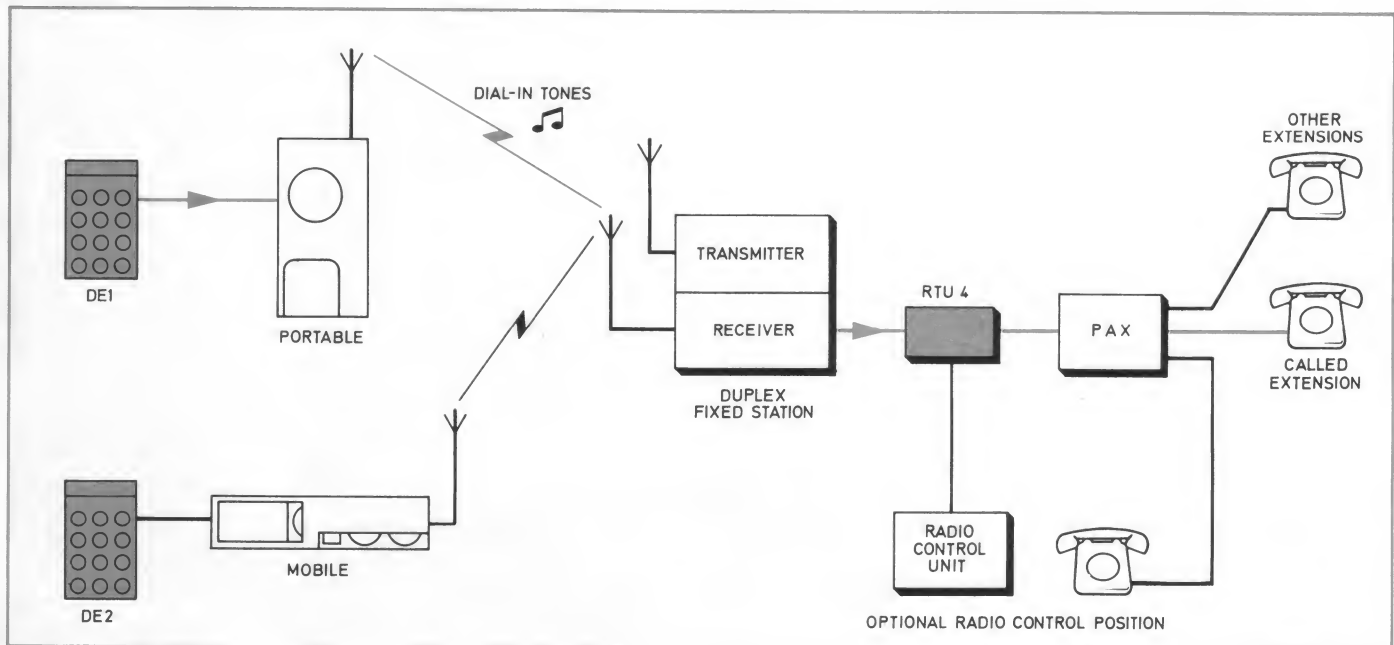
### Call Duration Timer

Adjustable to suit user requirements up to a maximum of 8 minutes. Operates from the start of a call and gives a tone indication with the termination of the call at the end of the pre-set period.

### Squelch Operated Timers

Adjustable to suit user requirements up to a maximum of 2 minutes. A timer automatically clears down the system if the portable or mobile continuously transmits for the preset period.

Typical Dial-in System





*Encoder Type DE1 with 'Pocketfone 70'*

*Encoder Type DE2 for Mobiles*

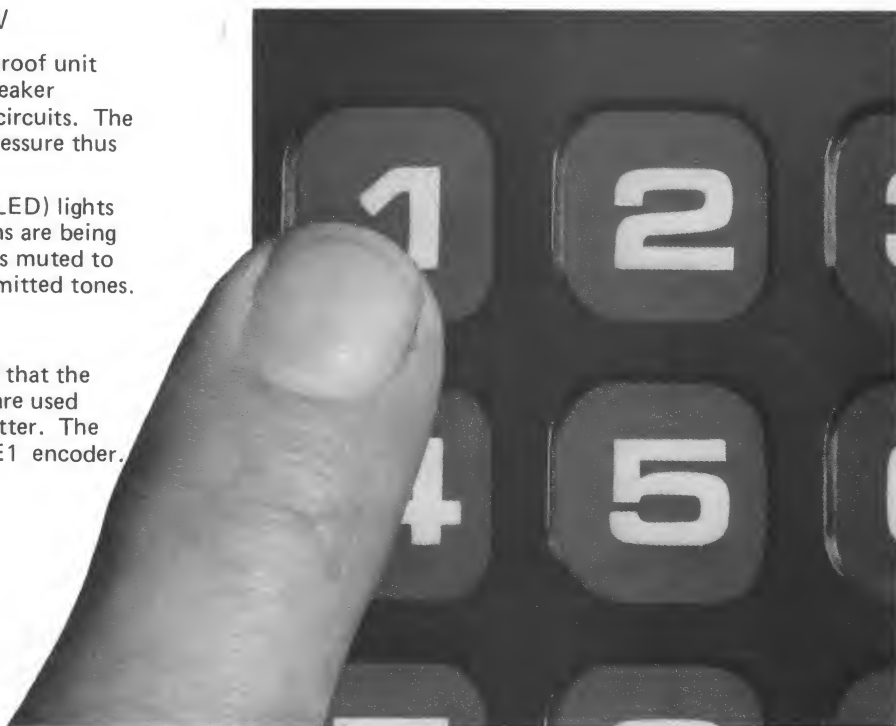
#### PORTABLE — SIMPLEX OPERATION

The DE1 encoder is a light, compact, showerproof unit embodying a dialling pad, microphone/loudspeaker transducer, press-to-transmit switch and tone circuits. The twelve 'dialling' keys require positive finger pressure thus avoiding the risk of accidental operation.

When a key is pressed a light emitting diode (LED) lights and remains alight while the tone combinations are being generated. During this period the transducer is muted to prevent stray noises interfering with the transmitted tones.

#### MOBILE — SIMPLEX OPERATION

The DE2 encoder is similar to the DE1 except that the existing mobile loudspeaker and microphone are used and a relay is incorporated to key the transmitter. The keys and operation are as described for the DE1 encoder.





# Technical Data

## Types DE1/DE2 & RTU4

PUBLICATION REF. No. TSP478/1  
Printed in England April 1975 5M

### GENERAL

<b>Radio Operating Mode</b>	Portable: Simplex Mobile: Simplex Fixed Station: Duplex	
	<b>Type DE1 (Portable)</b>	<b>Type DE2 (Mobile)</b>
<b>Power Supply</b>	15V (nominal) from portable	12V (nominal) from mobile
<b>Standby Current Consumption</b>	4.5 mA	4.5 mA
<b>Dialling Current Consumption</b>	12.0 mA (maximum)	12.0 mA maximum
<b>Dimensions</b>	70 mm wide x 120 mm high x 32 mm deep (2.75 x 4.7 x 1.3 in.)	70 mm wide x 120 mm high x 32 mm deep (2.75 x 4.7 x 1.3 in.) excluding mounting bracket
<b>Weight</b>	241g (8.5 oz.)	270g (9.5 oz.)
<b>Length of Lead</b>	1 metre (39 in.)	1 metre (39 in.)
<b>Termination of Lead</b>	5 pin plug (to suit microphone socket on portable)	15 way plug (to suit facility socket on mobile)
<b>Finish</b>	Black polycarbonate	Black polycarbonate with matt black mounting bracket
<b>Compatible Equipment</b>	PF2AMB PF2FMB PF2UB PF3FMB	'Olympic' } Facility 'Motafone' } socket 'Westminster' } required 'Europa' } MS1 module socket adapter required

### RTU 4 (Fixed Station)

<b>Power Supplies</b>	100–150, 190–240V AC 50–60 Hz or 24V DC <b>Note:</b> When the equipment is powered for 24V DC a separate 50V signalling supply may be required on line signalling systems
<b>Consumption</b>	50W approximately
<b>Impedance</b>	PAX line 600 ohms balanced Radio 600 ohms balanced
<b>Connections</b>	PAX 2-wire Radio 4-wire
<b>Audio Levels</b>	From exchange –25 dbm approximate minimum To exchange –8 to –18 dbm (preset) From receiver –28 to +1 dbm To transmitter –29 to +1 dbm
<b>Ring Tone</b>	18 to 50V at 50 Hz (from exchange)
<b>Hold Current</b>	35 mA (from exchange)
<b>Signalling to Radio</b>	DC signalling 50V nominal
<b>Dimensions</b>	495 mm wide x 318 mm high x 378 mm deep. (19.5 x 12.5 x 14.88 in.)
<b>Weight</b>	23 kg (50 lb) approximately

### ANCILLARY EQUIPMENT

<b>For Base Station (Local)</b>	A connecting cable harness is available for use when the RTU 4 is sited within 750 mm (30 in.) of the base station.
<b>For Base Station (Remote)</b>	A 4-wire Remote Control Module is available for use when the RTU 4 is sited at a distance from the radio equipment.
<b>For Radio Control</b>	Pye controllers are available for mixed schemes with local or remote controlled fixed stations.

*Typical figures based on normal operating conditions*

*Pye policy is one of continuous improvement, therefore the right is reserved to change specifications without notice.*

# Pye Tone Lock Module Type TL1

a plug-in tone lock signalling module for your mobile



Do you share your radio channel with other users?

If you do and would like to cut out all the other stations, why not have a Pye Tone Lock module, type TL1, fitted into your mobile radiotelephone?

This addition will keep the receiver muted until it receives the correct tone code from your own base station. This means that every call you receive is on your system only.

Operator fatigue is reduced through not listening to unwanted messages. This applies to base station and mobile operators alike as the Tone Lock works both ways. Compatible fixed station equipment must be used with this facility.

All solid-state construction, no reeds, so greater reliability with no false calls due to vehicle vibration. Encapsulated 'plug-in' filter modules of the latest design are used, selected from a range of 33 different lock tones in 2 groups. Each group of frequencies has been specially selected to give maximum separation between adjacent frequencies if both tones are taken from the same group.

The TL1 plugs into the special slot already incorporated in the 'Europa' and 'Olympic' mobiles, and provision is made for it to plug directly into the type F25 FM fixed station. There are therefore no costly installation charges. The facility can be provided for use with other Pye mobile equipment to special order.

The system may be defeated by operation of the Tone Lock "Off" button to enable a station to 'listen out' to ensure that the channel is clear before a transmission is made.



# Technical Data

## Type TL1

<b>Code Tones</b>	Total of 33 sub-audio tones with EIA spacing in the range 67,0–250,3 Hz		
<b>Code Characteristics</b>	Sub audio tone present during transmissions to hold the receive channel open. Channel closes when tone is removed at end of transmissions		
<b>Encode Build-up Time</b>	Not greater than 50ms from initiation to 90% of final amplitude at modulator input		
<b>Decode Response Time</b>	Not greater than 250ms to 75% of predetermined audio amplitude at receiver output		
<b>Deviation Levels</b>	<i>Channel Spacing</i>	<i>Peak Audio Deviation</i>	<i>Lock Tone Deviation</i>
	50 kHz	±15 kHz	0,9–2,0 kHz
	25 kHz	± 5 kHz	0,5–1,0 kHz
	12,5 kHz	±2,5 kHz	0,3–0,6 kHz
<b>Tone Filter ‘Q’</b>	Nominal 125 (adjustable 100–150)		
<b>Notch Filter Rejection</b>	Greater than 35 db at selected frequency		
<b>Lock Tone Stability</b>	Within ±0,5% of selected frequency over the temperature range –30°C to +60°C ambient, with ±10% of supply voltage		
<b>Lock Tone Output</b>	Adjustable up to 500 mV		
<b>Power Supply</b>	12V (nominal) DC at 20 mA from associated transmitter-receiver		

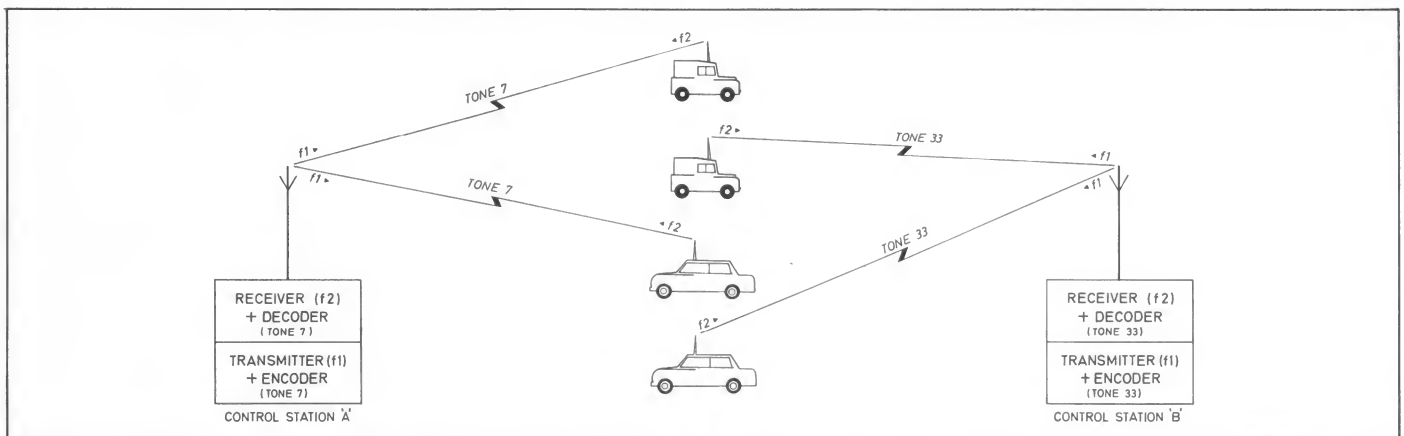
Tone Frequencies (standard EIA spacing)

GROUP A		GROUP B	
Tone	Frequency (Hz)	Tone	Frequency (Hz)
1	67,0	2	71,9
3	77,0	4	82,5
5	88,5	6	94,8
7	100,0	8	103,5
9	107,2	10	110,9
11	114,8	12	118,8
13	123,0	14	127,3
15	131,8	16	136,5
17	141,3	18	146,2
19	151,4	20	156,7
21	162,2	22	167,9
23	173,8	24	179,9
25	186,2	26	192,8
27	203,5	28	210,7
29	218,1	30	225,7
31	233,6	32	241,8
33	250,3		

For optimum working the operating frequencies should be selected from EITHER Group A or Group B. Total number of frequencies = 33 (17 in group A + 16 in group B). For other combinations, reference should be made to your local representative or Head Office.

*Typical figures based on normal operating conditions*

*Pye policy is one of continuous improvement, therefore the right is reserved to change specifications without notice.*



**N.B.**

In this example the control stations A and B are both using the same transmit and receive frequencies (F1 and F2). Therefore all four mobiles have F2 and F1 for their transmit and receive frequencies respectively. The two tones selected are from Group A.

PROVISIONAL  
INFORMATION

# Pye 'Pegasus' VHF FM Radiotelephone System

advanced defence, police & quasi-military equipment



#### LATEST TECHNIQUES

— silicon integrated circuits; thick film packages; PA module

#### RUGGED, WORLD-WIDE OPERATION

— resists rough handling; all-weather, all-climate performance

Modern radio technology, backed by the vast experience of Pye Telecommunications, makes possible the introduction to-day of the Pye 'Pegasus' — an advanced series of VHF FM radiotelephones for military, quasi-military and policing applications in the years ahead. Pye 'Pegasus' equipment comprises mobile, transportable and base station units, designed to achieve a high degree of compatibility and to meet all aspects of the complete radiotelephone system.

The 'Pegasus' design makes extensive use of silicon integrated circuitry and thick film modules; these techniques are used wherever they contribute to higher reliability, improved performance standards and easier maintenance. Great importance has been placed on reliability in the design. Only tried and proven components, many of which are BS9000 approved, have been selected. The equipment operates over an extensive temperature range making it suitable for world-wide service.

#### HIGH RELIABILITY

— closer tolerances; many BS9000 approved components

#### SIMPLIFIED MAINTENANCE

— economic, plug-in modules; minimum of soldered interconnections

The rugged construction of all units provides great durability and strength to resist rough handling in the rigorous conditions of field service. Safety features incorporated in the design include the non-reflecting black finish of the fascia panel and the complete absence of projecting knobs.

Easy maintenance is a feature of prime importance in 'Pegasus' equipment. Circuit functions are in the form of plug-in modules so that fault diagnosis can be carried out by module substitution. Test jigs as used in manufacturing are available, if required, for customers equipped with auto-test facilities.

The 'Pegasus' series of equipment has been evaluated by the UK Ministry of Defence.

 **TELECOM**

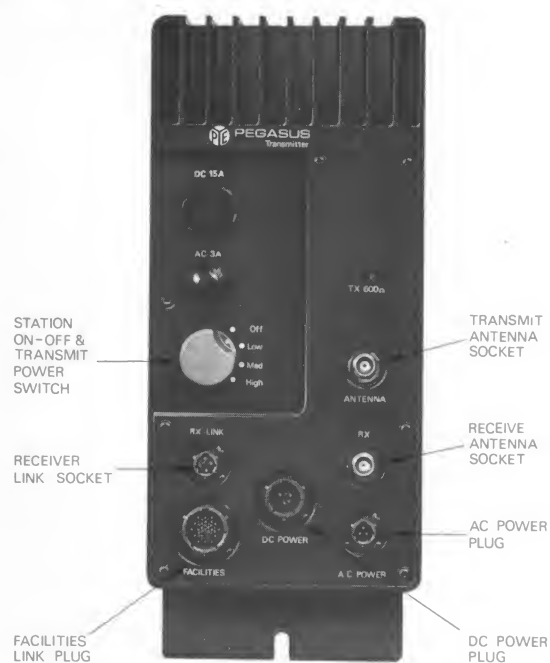


# Mobile

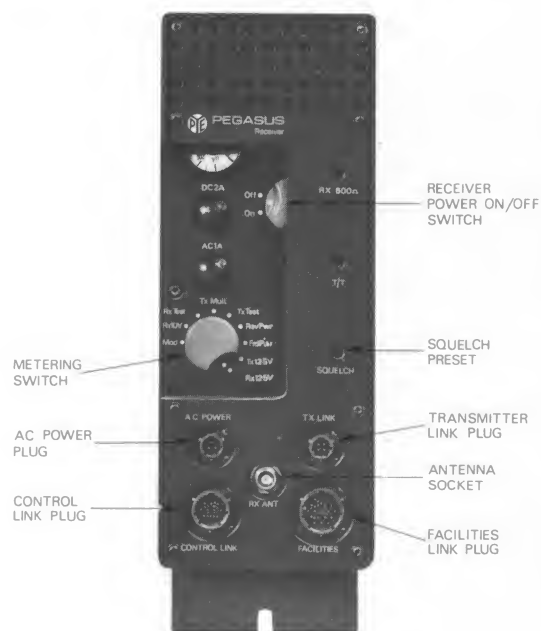


# Base Station

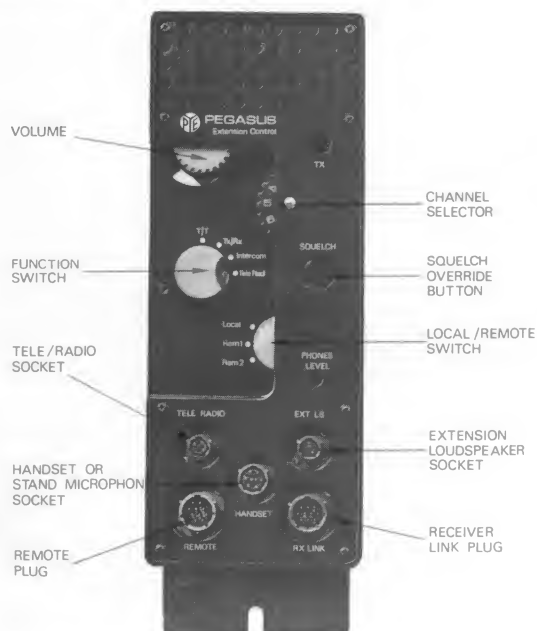
**Transmitter T252**



**Receiver R252**



**Controls C252E & C252R**



**Control C252V**



# Technical Data

## MOBILE TYPE M252

### GENERAL

<b>Operation</b>	Single or two-frequency simplex, or duplex/talkthrough
<b>Modulation</b>	Frequency (phase)
<b>Frequency Bands</b>	Band E 68–88 MHz (Other bands under consideration)
<b>Channel Spacing</b>	25 kHz (Other spacings available to special order)
<b>No. of Channels</b>	1 to 18
<b>Switching Bandwidth</b>	±0.5% of mean operating frequency on each of two RF heads
<b>Operating Temperature Range</b>	–30°C to +60°C (EIA specification); –25°C to +55°C (CEPT specification)
<b>Frequency Stability</b>	±0.001% (standard); ±0.0005% (optional)
<b>Power Supply</b>	(i) 12V (nominal) DC vehicle supply; positive or negative ground (ii) 24V (nominal) DC vehicle supply; positive, negative or 'floating' ground (via external 24V regulator unit) (iii) 100–150V, 190–240V AC, 40–60 Hz (using external AC power unit)
<b>Current Consumption</b>	Receive: 400mA (nominal) Transmit: 4.3A (nominal)
<b>Operator Controls</b>	(see overleaf)
<b>Dimensions</b>	199 mm wide x 91 mm high x 234 mm deep (7.8 x 3.5 x 9.2 in.)
<b>Weight</b>	4.4 kg (9.7 lb)
<b>Finish</b>	Weatherproof die cast aluminium casing Front panel: matt black. Case: olive drab
<b>Ancillaries</b>	(see overleaf)

### RECEIVER

<b>Sensitivity</b>	20 db quieting for 0.35 $\mu$ V (p.d.) signal input
<b>Signal/Noise Ratio</b>	12 db SINAD for 0.25 $\mu$ V (p.d.) signal input
<b>Spurious Response Attenuation</b>	Better than 90 db below carrier (single signal)
<b>Selectivity</b>	80 db (two signal C.E.P.T. method)
<b>Intermodulation Attenuation</b>	Better than 70 db
<b>Audio Output</b>	3W maximum into 3 ohm load, with less than 5% distortion
<b>Squelch Sensitivity</b>	6 db quieting at threshold. Adjustable.

### TRANSMITTER

<b>Power Output</b>	Switch position 'HI': 15W minimum into 50 ohms load. Switch position 'LO': down to 5W available by internal adjustment.
<b>Spurious Emissions</b>	Each less than 0.25 $\mu$ W
<b>Harmonic Emissions</b>	Each less than 2.5 $\mu$ W
<b>Modulation Response</b>	Within +1 db and –3 db of a 6 db/octave pre-emphasis characteristic from 300 Hz to 2.7 kHz
<b>Modulation</b>	Adjustable up to ±5 kHz deviation (for 25 kHz channel spacing)



# Technical Data

PUBLICATION REF. No. TSP 368/2  
Printed in England May 1974 1000

## BASE STATION TYPE 252

### GENERAL

<b>Operation</b>	Single or two-frequency simplex, or talkthrough
<b>Modulation</b>	Frequency (phase)
<b>Frequency Bands</b>	Band E 68–88 MHz (Other bands under consideration)
<b>Channel Spacing</b>	25 kHz (Other spacings available to special order)
<b>No. of Channels</b>	<i>Extension/Local control:</i> 1 to 12 (or 1 to 11 with 'off' position) <i>Remote control:</i> 1 to 6 (or 1 to 5 with 'off' position)
<b>Switching Bandwidth</b>	±0.5% of mean operating frequency on each of two RF heads
<b>Operating Temperature Range</b>	–30°C to +60°C (EIA specification) –25°C to +55°C (CEPT specification)
<b>Frequency Stability</b>	±0.001% (standard) ±0.0005% (optional)
<b>Power Supply</b>	(i) 100–120V, 200–260V AC; 50–60 Hz (ii) 12V (nominal) DC vehicle supply (negative ground preferred)
<b>Current Consumption</b>	Receive (standby): 500mA } Transmit (high power): 12A } measured for 12V (nominal) DC input
<b>Operator Controls</b>	(see overleaf)

Dimensions	<i>Transmitter Type T252</i>		<i>Receiver Type R252</i>		<i>Controller Types C252E&amp;R</i>		<i>Controller Type C252V</i>	
	mm	in.	mm	in.	mm	in.	mm	in.
Width:	140	(5.5)	116	(4.6)	116	(4.6)	115	(4.5)
Height:	285	(11.2)	285	(11.2)	285	(11.2)	180	(7)
Depth:	308	(12.1)	308	(12.1)	308	(12.1)	70	(2.8)
<b>Weight</b> (approx.)	kg	lb	kg	lb	kg	lb	kg	lb
	18.6	41	8.2	18	7.7	17	1.3	3
<b>Finish</b>	Weatherproof cast aluminium casing Front panel: matt black. Case: olive drab							

### RECEIVER

<b>Sensitivity</b>	20 db quieting for 0.35 µV (p.d.) signal input
<b>Signal/Noise Ratio</b>	12 db-SINAD for 0.25 µV (p.d.) signal input
<b>Spurious Response Attenuation</b>	At least 90 db below carrier
<b>Selectivity</b>	80 db (two signal CEPT method)
<b>Intermodulation Attenuation</b>	Better than 70 db
<b>Squelch Sensitivity</b>	6 db quieting at threshold. Adjustable.
<b>Antenna Impedance</b>	50 ohms

### TRANSMITTER

<b>Power Output</b>	40W maximum into 50 ohms load. Low and medium power switch positions can be internally preset down to 5W.
<b>Spurious Emissions</b>	Each less than 0.25 µW
<b>Harmonic Emissions</b>	Each less than 2.5 µW
<b>Modulation Response</b>	Within +1 db and –3 db of a 6 db/octave pre-emphasis characteristic from 300 Hz to 2.7 kHz
<b>Modulation</b>	Adjustable up to ±5 kHz deviation for 25 kHz channel spacing
<b>Antenna Impedance</b>	50 ohms

Pye policy is one of continuous improvement, therefore the right is reserved to change specifications without notice.

Pye Telecommunication Ltd.  
Telephone: Cambridge (0223) 61222

Cambridge CB5 8PD England  
Telex: 81166 (PYETELCOM CAMBG)

Cables: PYE TELECOM CAMBRIDGE

# Pye Bantam Portable V.H.F. Radiotelephone

## TYPE HP 1 FM

The Pye **Bantam** portable v.h.f. equipment Type HP 1 FM is an all-transistor pocket size radio telephone for operation in the v.h.f. band from 25-174 Mc/s. It meets the British Post Office specification No. W6346 for frequency modulated portable equipment.

With an r.f. output of approximately  $1\frac{1}{2}$  watts, the Bantam can achieve reliable communication with a base station up to 15 miles distant or 2-3 miles between two Bantams, depending on terrain and frequency. A slight reduction in power output is to be expected at the higher frequencies. The built-in loudspeaker may be switched in or out of circuit as required. When the speaker is switched off the weatherproof hand microphone serves as a transmitter microphone and receiving earphone.

The Bantam is available for channel spacings of 25 or 30 kc/s and 40 or 60 kc/s. A fully noise-compensated squelch is included and up to three switch-selected channels may be provided in standard equipment. The transmitter and receiver are both assembled on one printed circuit which is fully accessible for servicing when the case is removed.

The Bantam is extremely compact and weighs less than  $4\frac{3}{4}$  lb. complete with batteries. The set can be operated in its carrying case which may be slung from the shoulder.

The Bantam will operate from either standard torch cells or rechargeable batteries. It is normally supplied with a cassette for torch cells and the rechargeable nickel cadmium battery is available as an optional extra.

A constant current charger, type BC 1 is available and is recommended for use with the nickel cadmium storage battery. The charger operates from the a.c. supply and will charge up to three batteries simultaneously.

## FEATURES

- Fully transistorised Transmitter and Receiver
- Very high performance Receiver
- Crystal Filter selectivity
- 1.5 watt Transmitter Output
- Operates from Rechargeable or Dry Batteries
- 250mW of audio power
- Provision for external antenna when longer range is required
- Weatherproof



## GENERAL

<b>Service</b>	F3 telephony. Single or two-frequency simplex.
<b>Frequency Range</b>	25-174 Mc/s
<b>Channel Spacing</b>	25/30 or 40/60 kc/s
<b>Antennas</b>	A 50 ohm coaxial socket is provided in addition to a built-in telescopic antenna.
<b>Power Supply and Endurance</b>	<p><b>Nickel cadmium sealed accumulator</b>            For TX/RX ratio 1 : 10 12 hours            For TX/RX ratio 1 : 50 16 hours.</p> <p><b>U7 cells in cassette</b>            For TX/RX ratio 1 : 10 8 hours continuous            For TX/RX ratio 1 : 50 12 hours continuous            Increase by 30% for rest after 3 hours use            Increase by 50% for rest after 1 hours use.</p> <p><b>Mercury cells in cassette</b>            For TX/RX ratio 1 : 10 30 hours            For TX/RX ratio 1 : 50 45 hours.</p>
<b>Controls</b>	OFF-ON with loudspeaker — ON without loudspeaker Note: The microphone is connected as an earphone when the loudspeaker is disconnected. Volume Control Squelch Control Channel Switch Press-to-transmit button on microphone.
<b>Dimensions</b>	(Over Controls) $8\frac{3}{8}$ in. high, $5\frac{1}{2}$ in. wide, $2\frac{1}{8}$ in. deep (21.8 × 14.0 × 5.25 cm). (In carrying case) $9\frac{3}{8}$ in. high, $5\frac{3}{8}$ in. wide, $2\frac{5}{8}$ in. deep (24.7 × 14.6 × 5.92 cm).
<b>Weight</b>	Less carrying case, batteries and microphone 2 lb 14 oz (1.31 kg) Complete, Approx. 4 lb 12 oz (2.15 kg).

## RECEIVER

<b>Sensitivity</b>	0.5 $\mu$ V for 20dB quieting
<b>Audio Output</b>	250mW at less than 10% distortion
<b>Spurious Responses</b>	At least 60dB down
<b>Selectivity</b>	60dB.
<b>Intermediate Frequencies</b>	First I.F. 10.7 Mc/s    Second I.F. 455 kc/s.

## TRANSMITTER

<b>Power Output</b>	1.5 watts nominal.
<b>Modulation</b>	Maximum peak deviation 5 kc/s or 15 kc/s for 25 kc/s or 50 kc/s channel spacing respectively.

*Specification details subject to change without notice.*

**PYE TELECOMMUNICATIONS LTD · CAMBRIDGE · ENGLAND**

Printed in England 564/4R/5M



## Transistor Portable A.M. Radiotelephone

(Type AM 10 P)

The Pye portable AM radiotelephone Type AM 10 P operates in the v.h.f. band from 25 to 174 Mc/s. It has the high performance of comparable vehicle mobiles and can be readily integrated into a radiotelephone system.

The all-transistor receiver minimises battery drain and allows the receiver to be switched on for long periods without discharging the battery.

In the 5 watt transmitter a 'standby' position is unnecessary; transistors and quick-heat valves allow for immediate transmission and the saving in standby current drain results in further battery economy.

The equipment is available with either an unspillable lead acid rechargeable battery of 9 ampere hour capacity or a fully sealed nickel cadmium battery of 6 ampere hour capacity. The 9 ampere hour capacity battery gives up to 60 hours duration on receive and about 18 hours on a normal ratio of transmit-to-receive time. A special battery charger is available and recommended for use with these batteries. It is fully automatic and switches itself off when charging is complete.

The equipment is available for single or two-frequency simplex operation with a choice of channel spacing of 25 or 50 kc/s. Single channel or up to 6 switched channel versions are provided as standard. All equipments have an electronic squelch fitted.

The fist microphone is waterproofed and the microphone and loudspeaker are specially designed to give clear and distinct speech, which is particularly appreciated in noisy surroundings.

This versatile equipment is packaged in a shock-tested carton suitable for land, sea or air transportation.



**Fully transistorised receiver.**

**Quick-heat valves in transmitter.**

**Receiver battery drain — 200mA.**

**No standby battery drain.**

**5 watts R.F. output.**

**Sealed I.F. block filters.**

**Completely weatherproof.**

**Electronic Squelch.**

**25 or 50 kc/s channelling by change of filter.**

**1 to 6 channels as required.**

**Designed to meet British, American and European specifications.**



### GENERAL

<b>Operation</b>	Single or two-frequency simplex using amplitude modulation.
<b>Frequency Range</b>	25 — 174 Mc/s.
<b>Channel Spacing</b>	Option of 25/30 or 50/60 kc/s channelling.
<b>Power Supply</b>	12 volt lead acid storage battery — 9 A/H capacity. 6 A/H capacity nickel cadmium storage battery can be supplied if required.
<b>Current Consumption</b>	Receive only: 0.2A. Transmit: 4.0A.
<b>Dimensions</b>	12 $\frac{3}{4}$ in. high $\times$ 15 $\frac{3}{4}$ in. wide $\times$ 4 $\frac{5}{8}$ in. deep. (32.3 $\times$ 40.0 $\times$ 11.7 cm). Height is increased by 1 $\frac{1}{2}$ in. (3.8 cm) when lead acid battery is used.
<b>Weight</b>	20 lb (9.7 kg). Weight increases by approx. 2 lb (0.9 kg) when lead acid battery is used.
<b>Optional Extra</b>	Six-channel operation.

### TRANSMITTER

<b>Power Output</b>	5 watts nominal — varies according to operating frequency.
<b>Spurious Outputs</b>	Each less than 2.5 $\mu$ W at aerial terminals.
<b>Modulation Response</b>	Within +1dB and -3dB between 300 c/s and 3 kc/s relative to 1000 c/s.

### RECEIVER

<b>Sensitivity</b>	0.5 watts output for 1 $\mu$ V (p.d.) signal input	} Modulated 30% at 1000 c/s.
<b>Signal/Noise Ratio</b>	1 $\mu$ V (p.d.) for 10dB signal/noise ratio	
<b>Audio Output</b>	1 watt with less than 5% distortion.	
<b>Spurious Response Attenuation</b>	Better than 85dB below carrier.	
<b>Intermediate Frequencies</b>	1st I.F. — 10.7 Mc/s. (6 Mc/s when carrier is below 68 Mc/s). 2nd I.F. — 455 kc/s. (Block Filter).	
<b>Squelch</b>	Electronic squelch fitted as standard.	

*Specification details subject to change without notice*

**PYE TELECOMMUNICATIONS LTD . CAMBRIDGE . ENGLAND**

Printed in England JECP & S 1163/5/10M

# Pye 'Westminster' Transportable Conversion Unit Type P 15 PU

converts your mobile to a battery portable



SIMPLE CONVERSION  
LONG ENDURANCE RECHARGEABLE POWER  
SUPPLY  
BATTERY CAN BE CHARGED WITHOUT  
REMOVAL  
TELESCOPIC ANTENNA  
CARRYING CASES AVAILABLE

Pye 'Westminster' front mounted mobile radiotelephones, types W 15 AM and W15FM, and marine radiotelephone type W 15 MN, can now be made transportable by adding a conversion unit type P15 PU. The conversion provides the radiotelephone with additional flexibility, since it can be readily adapted for portable use without alteration to its existing form.

The conversion unit, which contains a battery power supply, loudspeaker and retractable antenna, accepts the complete 'Westminster' transmitter-receiver case. Standard plugs and sockets interconnect the equipments and two easily-fitted metal straps secure the radiotelephone in position. The unit casing is colour-matched to the 'Westminster'.

The unit is fitted with eleven rechargeable, sealed nickel-cadmium cells which provide a 13.75V source to power the radiotelephone. The battery supply has a capacity of 4 Ah which gives considerable endurance without recharging. A socket is fitted to enable the battery to be recharged without removal from the equipment. A battery charger, type BC2, with interconnecting lead is available.

The conversion unit is fitted with the standard 'Westminster' loudspeaker so that the audio performance of the mobile equipment is maintained. A loudspeaker on-off switch can be fitted as an option. The retractable antenna is adjusted to match the operating frequency band required, and this should always be quoted when ordering.

 **TELECOM**



# Technical Data

## Type P 15 PU

PUBLICATION REF. No. TSP226/5  
Printed in England December 1973 5M

### GENERAL

<b>Compatible Equipment</b>	'Westminster' types W 15 AM and W 15 FM front mounted radiotelephones and W 15 MN marine radiotelephone. Full details of these equipments are given in Publications Ref. No. TSP157 (W 15 AM), TSP158 (W 15 FM) and TSP172 (W 15 MN)
<b>Power Supply</b>	11 x 1.25V rechargeable nickel-cadmium cells series-connected to provide 13.75V Capacity: 4 Ah
<b>Battery Endurance</b>	For 10% transmit, 70% receiver standby, 20% receive (ratio 1:7:2) : 8 hr For 2% transmit, 88% receiver standby, 10% receive (ratio 1:44:5) : 15 hr
<b>Connectors</b>	Power supply to transceiver: 7-way socket Loudspeaker to transceiver: 2-pin plug Antenna to transceiver: Coaxial elbow plug Charging facility: 6-way plug
<b>Antenna</b>	Built-in telescopic adjusted for working frequency band
<b>Dimensions</b>	With radiotelephone fitted: 254 mm wide x 130 mm deep x 273 mm high (incl. handle) (10 x 5.1 x 10.7 in.)
<b>Weight</b>	3.8 kg (8.5 lb) 5.9 kg (13 lb) approx. with transmitter-receiver unit fitted
<b>Finish</b>	Smoke grey
<b>Options</b>	(i) Telephone handset in place of fist microphone (when supplied complete with radiotelephone) (ii) Loudspeaker switch

### OPTIONAL ACCESSORIES

<b>Leather Carrying Case</b>	Dimensions: 346 mm x 298 mm x 152 mm (13.6 x 11.7 x 6 in.) Weight: 1.8 kg (4 lb) Colour: black
<b>Canvas Carrying Case</b>	Dimensions: 346 mm x 298 mm x 152 mm (13.6 x 11.7 x 6 in.) Weight: 1.3 kg (3 lb) Colour: navy blue
<b>Battery Charger (type BC2)</b>	Dimensions: 216 mm x 137 mm x 146 mm (8.5 x 5.4 x 5.7 in.) Weight: 2.7 kg (6 lb)
<b>External Supply Connector</b>	Part No. 275981/2 (N.B: a fused supply must be used)

*Typical figures based on normal operating conditions*

*Pye policy is one of continuous improvement, therefore the right is reserved to change specifications without notice.*

The portable 'Westminster' is ideal for operation inside a vehicle. Both the vehicle antenna and battery supply can be easily connected, providing the equipment with standard mobile performance. A power lead is available as an accessory for connecting the portable to the fused vehicle supply.

A weatherproof carrying case, in either leather (illustrated opposite) or canvas, is available as an optional accessory. The cases include space for a telephone handset if this is preferred to the fist microphone provided with standard 'Westminster' radiotelephones.

**Pye Telecommunications Ltd. Cambridge CB5 8PD, England**  
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Cables: PYELECTECOM CAMBRIDGE



# Pye 'Compak 8' HF SSB Packset

a technically-advanced, easy-to-operate SSB portable



#### SIMPLE TO OPERATE

- minimum of controls; simple procedure

#### EFFECTIVE, EFFICIENT ANTENNA

- sectional loaded whip; simple, precise tuning in seconds

#### RUGGED CONSTRUCTION

- durable, lightweight case; solid state electronics

#### WIDE BAND DESIGN

- 8 switched channels in the 2–9 MHz range

#### CLIP-ON BATTERY PACK

- automatic connection; separate or 'in situ' recharging

#### MAINTENANCE SIMPLIFIED

- plug-in transmitter and receiver modules

The Pye 'Compak 8' is a technically-advanced SSB portable packset designed for a wide range of users including military, police and other security forces, surveyors, explorers and the like — indeed anyone with a need for efficient two-way HF communication equipment in lightweight portable form.

'Compak 8' is made for the non-technical operator. Gone are the complex, time-consuming channel alignment and band switching often associated with SSB equipment. With the absolute minimum of controls, the 'Compak 8' is extremely simple to operate.

'Compak 8' is a new concept in wide band design. Using the latest solid state techniques in integrated circuits, field effect transistors and wide band devices, it has an outstanding performance over the HF range 2–9 MHz. Operating directly from a rechargeable battery, it gives a power output of 10W (p.e.p.) on any of 8 channels in this frequency band. Low power switching is available for local working.

'Compak 8' has entirely new, easy-to-operate antenna tuning. A fibre-glass whip, four-sectioned for convenient packing when not in use, is mounted on a rugged, off-centre, loading section. Precision tuning of the antenna to any channel is obtained rapidly, with the minimum of skill, by a visual indication of resonance. The battery pack of nickel-cadmium cells clips on to the base of the transceiver with automatic connection and weather sealing, whilst the voltage can be monitored on the front panel meter. The 24V pack has a capacity of 4 AH and can be recharged separately or 'in situ' via a front panel socket. A charging accessory is available.

The 'Compak 8' is housed in a rugged case of the latest reinforced plastics, combining durability and strength with lightness. The separate transmitter-receiver and battery pack are independently sealed and are submersible. Solid state circuitry throughout and the selection of all components for highest reliability ensure consistent operation over the wide range of environmental conditions encountered throughout the world.

Simplified maintenance is a feature of the equipment. Components are mounted on printed circuit boards and clearly coded for rapid identification. Transmitter and receiver units are plug-in modules for instant replacement anywhere at any time.

'Compak 8' can be carried either by a simple halter or by using a rucksack and frame. Details of these and many other optional accessories are given inside.



TELECOM

# Technical Data

PUBLICATION REF. No. TSP319/3  
Printed in England March 1975 4M

## GENERAL

<b>Operation</b>	Simplex in the following modes: Telephony (A3J): single sideband with suppressed carrier Telegraphy (A2J): keyed tone
<b>Frequency Range</b>	2–9 MHz
<b>No. of Channels</b>	8 (channels can be anywhere within the above frequency range)
<b>Operational Sideband</b>	Upper sideband supplied as standard. (Lower sideband available on request)
<b>Frequency Stability</b>	±15 p.p.m. over the temperature range –20°C to +55°C
<b>Clarifier Range</b>	±15 p.p.m.
<b>Crystals</b>	American style HC25U DEF style K (Pye specification P81)
<b>Environmental</b>	
<b>Temperature Range</b>	–20°C to +55°C
<b>Humidity Range</b>	Up to 100%
<b>Altitude Range</b>	Up to 3000 metres
<b>Power Supply</b>	24V (nominal) DC provided by 25V battery of rechargeable nickel cadmium cells Capacity: 4 AH
<b>Current Consumption</b>	Receive: 100mA Transmit (low power): 350 mA Transmit (high power): 1.4A
<b>Battery Endurance</b>	Receive continuous: 35–40 hours Receive/transmit ratio 10:1 low power: 29 hours approx. high power: 15 hours approx.
<b>Antenna</b>	Off-centre loaded 2.4 metre (8 ft) whip
<b>Operator Controls</b>	TRIM (clarifier) CHANNEL selector FUNCTION switch GAIN control Transmit button (on fist microphone) Antenna tuning (on loading coil)
<b>Dimensions</b>	317 mm high x 267 mm wide x 114 mm deep (12½ x 10½ x 4½ in.)
<b>Weight</b>	Less than 7 kg (15½ lb) including battery and standard accessories
<b>Optional Accessories</b>	(i) Battery charger type BC20 (vii) Junction box for 2nd handset (ii) Handset (viii) Earth spike with connecting lead (iii) Rucksack (ix) Headset and boom microphone (iv) Carrying frame (x) Functional test set type TS2 (v) Test jigs (xi) Morse key and headset assembly (vi) Slant wire antenna kit

## RECEIVER

<b>Sensitivity</b>	1 µV (p.d.) signal input for 5 mW audio output into 100 ohms
<b>Signal/Noise Ratio</b>	At least 15 db at 1 µV (p.d.) signal input
<b>Selectivity</b>	2.4 kHz at –6 db; 4.8 kHz in excess of –45 db
<b>Image Rejection</b>	At least 50 db (90 db typical under operational conditions using packset whip)
<b>AF Output</b>	10 mW minimum
<b>Overall Distortion</b>	Less than 10% at 5 mW output
<b>Automatic Gain Control</b>	Less than 10 db change in output for 100 db increase in input above 10 µV (p.d.)

## TRANSMITTER

	<i>High Power</i>	<i>Low Power</i>
<b>Power Output</b>		
A2J mode:	10W r.m.s.	0.5W r.m.s.
A3J mode:	10W p.e.p.	0.5W p.e.p.
<b>Output Load Impedance</b>	50 ohms (nominal)	
<b>Carrier Suppression</b>	–40 db	
<b>Suppressed Sideband</b>	–40 db	
<b>AF Response</b>	500 Hz – 2.7 kHz ±3 db	
<b>Compression</b>	30 db approx. (for 6 db change in RF output)	
<b>Microphone</b>	Electro-magnetic	

*The typical figures given above are measured with an input voltage of 25V DC.  
Any degradation of these figures at the extreme limits of the operating temperature range is normally not greater than 3 db for all parameters.*

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Cables: PYETELCOM CAMBRIDGE



# Pye VHF Radiotelephone Fixed Station Type F 17 FM



SOLID-STATE RECEIVER & TRANSMITTER  
10–15W RF OUTPUT  
FIELD-EFFECT TRANSISTORS USED IN  
RECEIVER

The Pye VHF fixed station type F 17 FM is intended for use as the control station in a mobile radiotelephone scheme.

This frequency-modulated fixed station radiotelephone is suitable for simplex or duplex operation on a band in the frequency range 68–174 MHz. There is a choice of 12.5 kHz, 20 kHz, 25/30 kHz or 40/50/60 kHz channel spacing. Although the standard equipment is for single channel operation, versions having a front panel switch for local selection of up to six channels can be provided.

The use of field-effect transistors in the RF and mixer stages gives the receiver very good linearity over a wide range of input signals to provide good intermodulation and blocking performance. The receiver is fitted with an electronic squelch circuit which is protected against signal flutter.

SUITABLE FOR ALL CLIMATES  
ELECTRONIC SQUELCH  
DESIGNED TO MEET ALL RELEVANT  
SPECIFICATIONS

A combination of crystal and LC filters gives optimum IF selectivity requiring no adjustment. Special versions of the receiver are available with additional RF selectivity for extra protection against interference from co-sited transmitters.

The equipment comprises separate transmitter and receiver units which can be fitted together in a styled cabinet as illustrated. The cabinet is available in a number of heights to meet scheme requirements. Alternatively, the transmitter and receiver panels can be provided separately for mounting on a standard 482 mm (19 in.) rack fitted with suitable runners.



Silicon transistors are used throughout. Modular construction in conjunction with printed circuit sub-units gives easy access to all components and simplifies servicing. Many of the printed circuit sub-units are common to the 'Westminster' FM mobile radiotelephone thus simplifying the stocking of spares. All components are selected for reliable operation over a wide range of temperature making the equipment suitable for all climates.

The fixed station operates from power supplies in the range 100–150V, 190–240V AC, 50–60 Hz. The receiver unit can be supplied for AC or 24V (nominal) DC operation; the transmitter unit is available for AC operation only and normally provides 24V (nominal) DC for the receiver.

The equipment is suitable both for local and for remote control using one of the Pye remote control units. Standard plans showing how the equipment is used in various system arrangements are available on request.



## Technical Data Type F 17 FM

### GENERAL

Operation Modulation	Single or two-frequency simplex, or duplex Frequency						
Frequency Bands (MHz)	T17 FM		R17 FM		R18 FM		R18 MN
	A = 148–174	A = 148–174	G = 38.6– 50	A = 148–174	G = 38.6– 50	A = 148–174	
	E = 68– 88	B = 132–156	H = 29.7– 38.6	B = 132–156	H = 29.7– 38.6		
	P = 79–101	E = 68– 88	P = 79 –101	D = 105–108	P = 80 –102		
				E = 68– 88			
Channel Spacing	T17 FM, R17 FM, R18 FM: 12.5kHz (type S), 20kHz (type R), 25/30kHz (type V) or 40/50/60kHz (type N) R18 MN: 20/25kHz (type V) or 40/50/60kHz (type N)						
No. of Channels	1–6 depending on frequency and crystal stability requirements						
Switching Bandwidths	R17 FM: $\pm 0.2\%$ of mean carrier frequency R18 FM and R18 MN: $\pm 0.1\%$ of mean carrier frequency						
Power Supply	100–150V, 190–240V AC 50–60 Hz. (The receiver is normally supplied for operation from 24V (nominal) DC which can be obtained from the transmitter, but an AC version is available as an option.)						
Power Consumption	Receiver: 9W Transmitter: 55W						
Frequency Stability	The following orders of stability are available to meet climatic and mandatory requirements:						
	(i) Up to $\pm 0.0005\%$ without ovens over the temperature range $-10^{\circ}\text{C}$ to $+50^{\circ}\text{C}$						
	(ii) Up to $\pm 0.001\%$ without ovens over the temperature range $-30^{\circ}\text{C}$ to $+50^{\circ}\text{C}$						
	(iii) $\pm 0.0005\%$ with ovens over the temperature range $-30^{\circ}\text{C}$ to $+50^{\circ}\text{C}$						
Dimensions	Receiver and transmitter panels: 480 mm wide x 89 mm high x 305 mm deep (19 x 3.5 x 12 in.) Basic cabinet (illustrated): 492 mm wide x 227 mm high x 378 mm deep (19.4 x 8.9 x 14.9 in.)						
Weight	Receiver: 4.3 kg (9½ lb) Transmitter: 6.1 kg (13½ lb) Single receiver and transmitter panels in cabinet: 17.2 kg (38 lb)						
Finish	Cabinet: smoke grey Front panels: light admiralty grey						
Optional Extras	(i) Local control of 2 to 6 channels, depending on frequency, channel spacing and crystal stability requirements (ii) Tone Lock (iii) Integral receiver AC power supply unit (iv) Talkthrough (v) Relay squelch (vi) Engineer's handset (vii) Receiver type R18 FM (or R18 MN) in place of type R17 FM (viii) Receiver front panel test meter/switch						

### RECEIVERS – TYPES R17 FM, R18 FM & R18 MN

Input Impedance	50 ohms unbalanced
Antenna Connector	UHF series SO 239
*Quieting Sensitivity	Type R17 FM: 20 db quieting for 1.2 $\mu\text{V}$ e.m.f. (types S, V) or 1.6 $\mu\text{V}$ e.m.f. (type N) signal input Type R18 FM, R18 MN: 20 db quieting for 1 $\mu\text{V}$ e.m.f. (types S, R, V) or 1.25 $\mu\text{V}$ e.m.f. (type N) signal input
*Usable Sensitivity	12 db S/NAD for 1 $\mu\text{V}$ e.m.f. signal input
Intermodulation Attenuation	At least 60 db (type S channelling)
IF Selectivity (single signal)	80 db (for type S, R, V and N channelling)
RF Selectivity	(See comparative response curves) Note: Type R18 FM and R18 MN: A 10 db reduction in RF gain (achieved by a wire link) provides a further reduction in off-channel inference in areas of high signal level
*Spurious Response Attenuation	Type R17 FM: better than 85 db below carrier Type R18 FM and R18 MN: better than 94 db below carrier
Squelch	Electronic (relay fitted for talkthrough and remote applications)
Audio Output	Adjustable to maximum of 1W into 3 ohm loudspeaker with less than 10% distortion; adjustable to maximum of +8 dbm into 600 ohms with less than 10% distortion

### TRANSMITTER – TYPE T17 FM

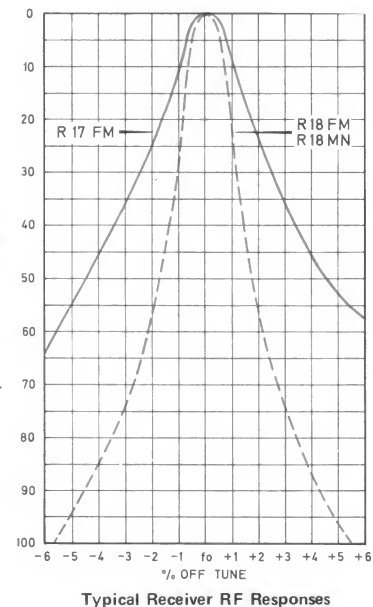
Output Impedance	50 ohms unbalanced
Antenna Connector	UHF series SO 239
*Power Output	10–15W
*Spurious & Harmonic Outputs	Each less than 2.5 $\mu\text{W}$ at antenna socket
*Hum and Noise Level	–40 db relative to $\frac{1}{2}$ peak system deviation at 1 kHz
Modulation	Adjustable up to $\pm 15$ kHz peak deviation
*AF Distortion	Less than 10% at $\frac{1}{2}$ peak system deviation

Typical figures based on normal operating conditions

\*Measured to E.I.A. Specifications RS 204 (receiver) and RS-152-A (transmitter) as applicable

Pye policy is one of continuous improvement, therefore the right is reserved to change specifications without notice.

NOTE: not all frequency bands, options etc. are available with each transmitter and receiver type or for every marketing area.



Typical Receiver RF Responses

# The Solid State Pye Pilot.

The Pye Pilot is an extremely compact, self-contained AM mobile radio unit, featuring 3-channel operation in the 118-136 aviation frequency band.

Simple to install, operate and maintain, the Pilot measures 8" x 6.7" x 2.7" and is operated by only two controls. A single front access screw locks the unit into a universal mounting cradle for easy maintenance and interchangeability. For operator safety the front panel is padded and there are no projecting knobs.



The Pilot's integrated micro-circuits further simplify servicing, as there are fewer components and less chance of initial breakdown.

Completely self-contained, the unit incorporates a high performance speaker and mounts easily under the dash. It is finished in an unobtrusive dull black.

## Other features

- Helical resonators provide maximum freedom from interference.
- Mixer stage employs field-effect transistor for good intermodulation and blocking performance.
- Single superhet circuit design minimizes spurious responses.
- Sealed quartz crystal filter gives optimum I.F. selectivity.

## Receiver features

- Electronic squelch to suppress background noise in the absence of signals.
- Squelch threshold is pre-set, requiring no operator adjustment.
- Powered by standard 12 volt vehicle supply.
- Stabilized power supply unit isolates unit from voltage variation.
- Full protection against reverse polarity connection.
- Low battery drain — receiver uses only 75 mA.
- Instant "on" — thanks to solid state construction.

## Transmitter features

- Rugged solid state power output stage provides an R.F. output of 3 watts nominal.
- Employs direct transformer-less method of modulation.

FCC Type (50kHz) number MF5AM — MNQD





## Specifications

### GENERAL

Operation . . . . .	Single or two-frequency simplex
Modulation . . . . .	Amplitude
Frequency Bands . . . . .	Band C 118-136MHz
Channel Spacing . . . . .	50kHz — Optional 25kHz
No. of Channels . . . . .	3
Switching Bandwidth . . . . .	$\pm 0.2\%$ of mean operating frequency
Operating Temperature . . . . .	$-30^{\circ}\text{C} + 60^{\circ}\text{C}$
Power Supply . . . . .	12V (nominal) d.c. vehicle supply, positive or negative ground
Current Consumption . . . . .	Receive: 75 mA Transmit: 1A approximately
Operator Controls . . . . .	On-off and channel selector switch Volume control Press-to-transmit switch on microphone
Dimensions . . . . .	Width: 8 in. Height: 2.7 in. Depth: 6.75 in.
Weight . . . . .	3 $\frac{3}{4}$ lb.
Finish . . . . .	Case: PVC-clad aluminum in non-reflecting black Front Panel: Padded safety front in non-reflecting black

### RECEIVER

Sensitivity . . . . .	1 $\mu\text{V}$ (p.d.) signal input for 500 mW output at 30% modulation with 1 kHz tone
Signal/Noise Ratio . . . . .	10 db at 0.8 $\mu\text{V}$ (p.d.) signal input at 30% modulation with 1 kHz tone
Spurious Response Attenuation . . . . .	At least 70 db
Audio Output . . . . .	1W with less than 10% distortion
Squelch . . . . .	Electronic. Adjustable threshold pre-set to 0.8 $\mu\text{V}$ (p.d.)

### TRANSMITTER

Power Output . . . . .	2.5W minimum (at 13.8V d.c. input)
Spurious Outputs . . . . .	Each less than 2.5 $\mu\text{W}$ at antenna socket
Modulator Response . . . . .	Within $\pm 3$ db between 300 Hz and 2.5 kHz relative to 1 kHz
Typical figures based on normal operating conditions	

Specification details subject to change without notice

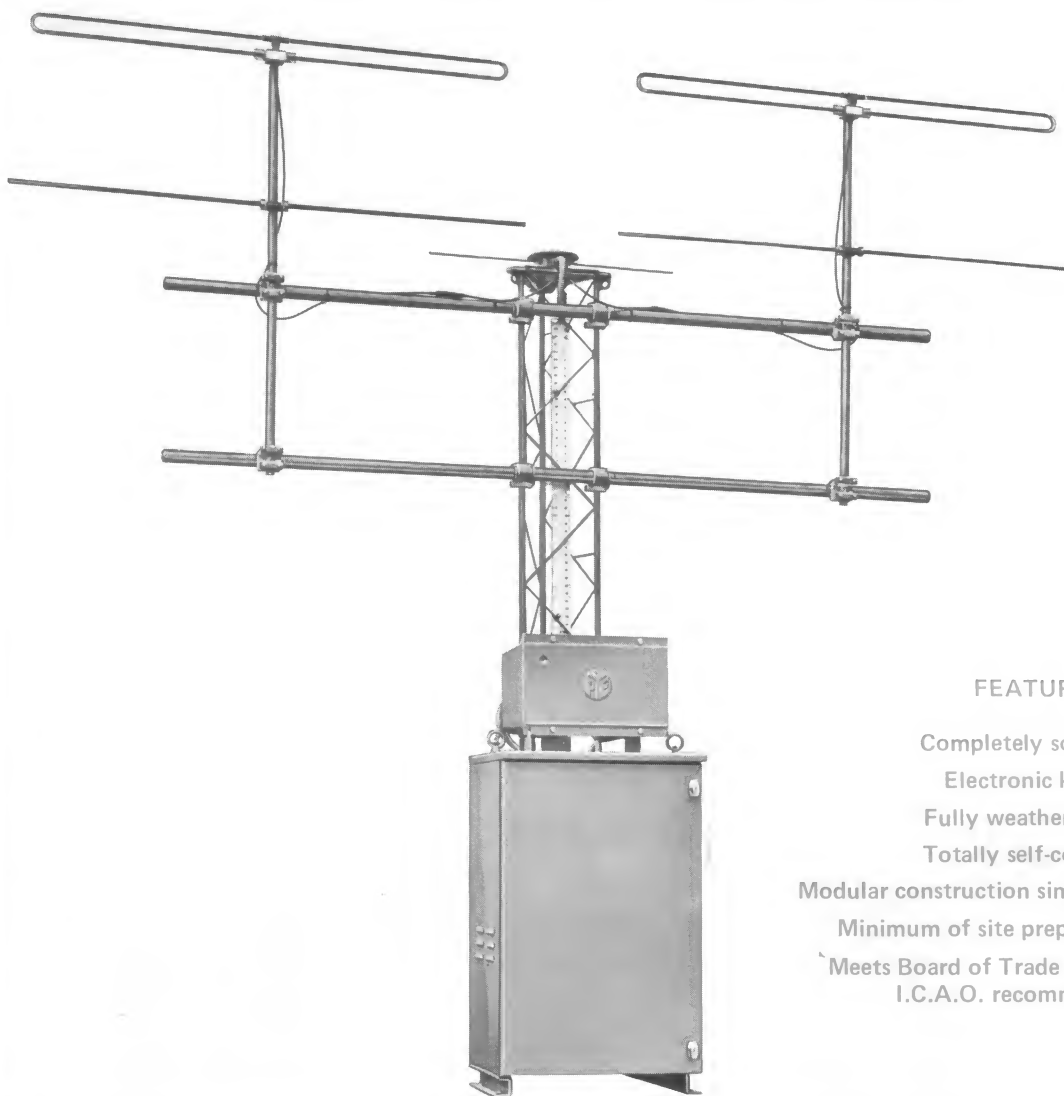


**PYE COMMUNICATIONS, INC.**  
A NORTH AMERICAN PHILIPS COMPANY  
100 U.S. Hwy. 46, Mountain Lakes, N.J. 07046  
Telephone (201) 335-8282



# Information Sheet

## I.L.S. Marker Beacon



### FEATURES

- Completely solid state
- Electronic keying
- Fully weatherproofed
- Totally self-contained
- Modular construction simplifies maintenance
- Minimum of site preparation required
- Meets Board of Trade specification and I.C.A.O. recommendations

### TYPE MB3

The Pye I.L.S. Marker Beacon is a modern, all solid-state equipment used in Instrument Landing Systems to provide range information to approaching aircraft. The equipment, which is designed to meet a British Board of Trade specification, is entirely self-contained and requires the minimum of site preparation.

The system has capacity for up to four marker beacons, each radiating a coded MCW signal at 75 MHz, with remote

control and monitoring over 600 ohm lines. Inner, middle and outer markers using I.C.A.O. stipulated identification codes and modulation frequencies are catered for, and also an additional marker which can be arranged to transmit any pre-determined morse character of up to four component dots and dashes. If, as in most installations, only middle and outer markers are required the spare capacity of the system can be used to accommodate duplicate equipment for a further runway approach.

## MARKER BEACONS

600 ohm Line Output Levels	Beacon monitoring signal: -15 dbm } to B.P.O. specification. Other Charge fail tone: -25 dbm } levels to customers' requirements
Operating Frequency	75 MHz
Power Output	5W maximum. Fully adjustable to required output by coarse attenuator (5 db steps) and fine attenuator (6 db)
Frequency Stability	Better than $\pm 0.005\%$
Harmonic Distortion	Better than 15%
Modulation Depth	95% $\pm 4\%$
Modulation Frequency Tolerance	Better than $\pm 2.5\%$
Operating Temperature Range	From $-15^{\circ}\text{C}$ to $+55^{\circ}\text{C}$ ambient
Power Supply	12V (nominal) d.c. with negative ground
Power Consumption	35W (measured at 12V d.c. input) each beacon
Dimensions	21½ in. wide x 14½ in. high x 17½ in. deep (54.6 x 36.8 x 44.4 cm)
Weight	80 lb (36 kg) approx.
Housing	Cast aluminium
Finish	Fully weatherproofed and conforming to requirements of DEF 1059. Painted BSS 381C, tint 592 (international orange) or to customers' requirements.

## ANTENNA SYSTEM

Polarization	Horizontal
Beacon Transmitter Antenna	Double yagi array comprising two 2-element (folded dipole + reflector) Pye type AE 2V antennas, spaced greater than $\lambda/2$ and fed in phase. Elements: ¾ in. outside diameter aluminium alloy, HT 30 WP, with mechanical damping Mounting booms: 1½ in. outside diameter aluminium alloy HT 30 WP
Monitor Antenna	Single dipole incorporated in monitor receiver and mounted between transmitter antennas
Mast	B.I.C.C. triangular-section lattice type, 10 ft (3 m) high
Boom Supports	1 29/32 in. outside diameter tubular steel, galvanised
Wind Loading Performance	The system is designed to operate satisfactorily with wind velocities of up to 80 m.p.h. (128 k.p.h.) and to withstand velocities of up to 100 m.p.h. (160 k.p.h.)
Finish	Fully weatherproofed and conforming to requirements of DEF 1059. Painted BSS 381C, tint 592 (international orange) or to customers' requirements.

## REMOTE CONTROL UNIT

600 ohm Line Input Levels	0 to -60 dbm adjustable by attenuators
Power Supply	100-150V, 190-240V a.c., 50-60 Hz
Power Consumption	40W max. (fully equipped with 4 remote control modules)
Dimensions	<i>Rack-mounting unit:</i> 19 in. wide x 7 in. high x 12 in. deep (48.3 x 17.8 x 30.5 cm) <i>In cabinet:</i> 19.4 in. wide x 8.9 in. high x 14.9 in. deep (49.2 x 22.7 x 37.8 cm)
Weight	<i>Rack-mounting unit:</i> 15 lb (6.8 kg) approx.
Finish	Light admiralty grey

Specification details subject to change without notice

**PYE TELECOMMUNICATIONS LTD**

Cambridge, England

Telephone: CAMBRIDGE (0223) 61222

Telex: PYETELCOM CAMBG 81166





# Information Sheet

## Pye 'Controller'

### A versatile radiotelephone controller for the 70's



#### FEATURES

- Built-in control facility options — adaptable by simple linking
- Two-way compression and line level compensation
- Audio mute circuit — no quiescent line noise
- Local 'receiver call' indication incorporated
- 1W audio output
- Modular construction — ease of maintenance
- Attractive, compact units for desk-top or wall mounting
- Parallel controller operation available with intercom
- Silicon semi-conductors and integrated circuits used throughout
- Integral handset, separate loudspeaker and tone signalling options

#### Type PC 1

The Pye 'Controller' is a modern, solid-state equipment for remotely controlling a v.h.f. or u.h.f. fixed station radiotelephone over landlines. Attractively styled for desk-top or wall mounting, with stand microphone or telephone handset, this versatile yet compact unit incorporates the latest design techniques and includes a number of special features providing improved performance and ease of operation. The new controller will meet a variety of requirements; details of the standard options available are given overleaf.

The Pye 'Controller' is designed to meet the operator's needs. The sloping front panel incorporates the loudspeaker and volume control, together with easy to operate press-button controls. Indicator lamps in well-defined colours occupy the optimum position for observation. The streamlined, two-tone case, moulded in high impact resistant material, is carefully designed in conjunction with the loudspeaker to give the correct acoustic balance. Intercommunication is available between parallel-operated controllers in d.c. signalling systems.



Standard equipment is supplied with a stand microphone but a telephone handset and cradle attachment can be provided as an optional alternative. With handset operation, the internal loudspeaker can be switched on and off by a front panel press-button.

Provision can be made for connecting an external loudspeaker. An external 'receiver call' facility can also be connected. This option provides for an audible or visual alarm to alert the operator when at a distance from the controller. A press-button is provided on the front panel to switch off the external call facility. A spare socket is provided on the rear panel for these purposes.

# Technical Data Type PC 1

## GENERAL

<b>Audio Output</b>	1W minimum
<b>Line Input Sensitivity</b>	Adjustable down to -40 dbm (see 'Speech Compression' and 'Muting' below)
<b>Line Output Level</b>	Adjustable in 1 db steps between -30 dbm and 0 dbm
<b>Line Characteristics</b>	Impedance: 600 ohms Loop resistance: 2-wire — not greater than 2,000 ohms 2-wire and earth — L1 and L2 to earth each not greater than 2,000 ohms
<b>Speech Compression</b>	Incorporated in both transmit and receive paths; output change does not exceed 3 db for 30 db change in input
<b>Muting</b>	Mute and level indicator operates less than 2 db below compression threshold; threshold adjustable between -40 dbm and -10 dbm
<b>Microphone</b>	Impedance: 2.4 k ohms Microphone insert response to be selected: 6 db per octave pre-emphasis slope (a.m. systems) or flat response (f.m. systems)
<b>Power Supply</b>	100-150V, 190-240V a.c., 50-60 Hz (The power supply unit provides a limited spare current of 250 mA at 18V d.c. with negative earth polarity, for the operation of approved ancillary equipment.)
<b>Power Consumption</b>	26 VA (standard equipment)
<b>Operator Controls</b>	Power supply on-off switch (fitted on rear panel) Volume control Loudspeaker Talkthrough Intercom. External 'receiver call' } These 'on-off' press-buttons are operative according to the options required
<b>Indicator Lamps</b>	Power on (green) Transmit (red) Transmit and receive modulation level (amber). Also indicates 'receiver call' in simplex systems Receiver call (white). This functions in duplex systems (special) only
<b>Finish</b>	Case: elephant grey. Panel: French grey
<b>Overall Dimensions</b>	10.6 in. wide x 4 in. high x 10.5 in. deep (270 x 101 x 266 mm)
<b>Weight</b>	6.5 lb (3 kg) approx.

## STANDARD OPTIONS

1. The following versions are available for remotely controlling a simplex fixed station. A press-to-transmit switch on the stand microphone or handset controls the transmit/receive function. Additional switched facilities are provided as listed below:

Type	Additional Facilities	D.C. signalling system
PC1/1SX	—	2-wire
PC1/2BSX	Controlled talkthrough	2-wire + E
PC1/2ESX	External 'receiver call'	2-wire + E
*PC1/2JSX	Controller power fail talkthrough	2-wire + E
*PC1/3RSX	Controlled talkthrough + external 'receiver call'	2-wire + E
*PC1/4ASX	Line fail talkthrough	2-wire
*PC1/4ESX	External 'receiver call'	2-wire

\*N.B. Parallel operation available only in special systems.

2. Telephone handset and cradle in place of the stand microphone which is supplied as standard in the desk-top version.  
Note: If a handset is preferred the suffix '/H' should be added to the type reference.
3. Facility for operating an external loudspeaker.
4. Facility for operating an external 'receiver call' device.

*Typical figures based on normal operating conditions*

*Pye policy is one of continuous improvement; therefore the right is reserved to change specifications without notice*

## PYE TELECOMMUNICATIONS LTD

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Cables: PYETELCOM CAMBRIDGE



PROVISIONAL  
INFORMATION

# Pye 'Page 1' UHF Personal Pagers Types PG3U & PG4U

a pager with a voice and a silent pager



- SMALL AND LIGHT
- RELIABLE PERFORMANCE
- HIGH SENSITIVITY
- RUGGED DURABILITY

These UHF pagers add new dimensions to the art of radio paging. In addition to the normal facilities provided by tone paging, type PG3U makes it possible for the paged individual to receive a speech message. Type PG4U provides a choice of tone or 'no-noise' vibration paging.

By adding the speech reception facility to normal tone paging the scope of a pager is increased. In Pye type PG3U the distinct alerting tone can be followed by a voice message, so providing an economic method of, for example, directly briefing emergency team personnel on the type and location of an emergency. In large industrial complexes type PG3U provides an excellent means of keeping key personnel constantly updated e.g. about transport movements, the availability of specialised equipment etc.

The other new concept in radio paging, provided by Pye type PG4U, gives a choice of tone or silent vibratory paging. The latter is particularly useful for alerting personnel in high ambient noise environments, for alerting deaf personnel and for discreet alerting in quiet areas.

Utilising two tone sequential signalling these two miniature pagers can alert individual wearers without inconveniencing other users on the same radio channel. Alternatively, groups of wearers can be collectively alerted.

Operation in the UHF band ensures virtually noise-free reception. Excellent signal penetration into buildings and heavily-screened areas is another important feature of UHF operation. The paging units also have a most important application as an overlay equipment providing a valuable extension to the scope of FM mobile schemes.

The solid state, highly reliable, sensitive receivers are each housed in an attractive high impact polycarbonate case equipped with a strong belt clip, or alternatively a pocket clip, resulting in easy-to-wear pagers.

 **TELECOM**

# Technical Data

PUBLICATION REF No. TSP517/2  
Printed in England December 1975 3M

## Types PG3U & PG4U

<b>Modulation</b>	Frequency
<b>Frequency Bands</b>	406–420 MHz 450–470 MHz 446–446.5 MHz (to special order)
<b>Channel Spacing</b>	25 kHz
<b>Selectivity</b>	Better than 58 db
<b>Spurious and Image Rejection</b>	Better than 55 db
<b>Signalling Code Form</b>	2 tone sequential
<b>Signalling Tone Frequency Range</b>	275–2000 Hz
<b>Paging Sensitivity</b>	15 $\mu$ V/m
<b>Maximum Call Rate</b>	2 seconds per call. Manual reset and automatic reset after a short period
<b>Operating Temperature Range</b>	–10°C to +40°C ambient
<b>Operator Controls</b>	Type PG3U : (i) OFF/ON switch and VOLUME control (ii) RESET switch Type PG4U : (i) OFF/ON switch (ii) TONE/VIB switch (iii) RESET switch
<b>Power Supply</b>	3.5–4.5V from nickel cadmium (Nicaid) rechargeable or mercury cells
<b>Battery Endurance</b>	Nicaid : 45 hr per charge Mercury : 350 hr
<b>Dimensions</b>	Height : 95 mm (3.75 in) Width : 60 mm (2.375 in.) Depth : 25 mm (1 in) <i>excluding</i> clip
<b>Weight</b>	200g (7.1 oz) <i>excluding</i> battery Mercury battery 10g Nicaid battery 15g
<b>Finish</b>	Black 'Martex'
<b>Compatible Control Station Encoders</b>	'Pyecall' PC90 series (90 codes maximum) 'Pyecall' PC960 series (960 codes maximum)
<b>Options</b>	(i) Desk-top unit charger type BC26 with spare battery charging facility (ii) Lightweight pocket clip or belt clip (iii) Earphone (Type PG3U only)

*Typical figures based on normal operating conditions*

*Pye policy is one of continuous improvement; therefore the right is reserved to change specifications without notice*

**NOTE:** *Not all frequency bands, options etc. are available for every marketing area*



*The compact pager clips easily and securely into a pocket or on to a waist belt*

*The pager remains fully operational while in the charger which caters for simultaneous charging of a spare battery*



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**Cables: PYETELCOM CAMBRIDGE**

# What are Community Repeaters ?

... a unique, cost-effective method of sharing communication facilities, while retaining your own individuality.

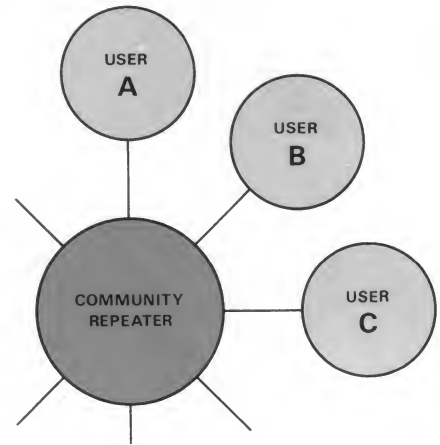
As a result of recent changes in the licensing procedure for two-way radio, Pye Telecommunications can now, for the first time, offer a new service of particular interest and benefit to smaller organisations with a need for mobile radio communications.

The new Community Repeater service allows a number of users — up to sixteen, in fact — to share a common base station in their area, thereby saving the full cost of the base station, its aerial and mast facilities.

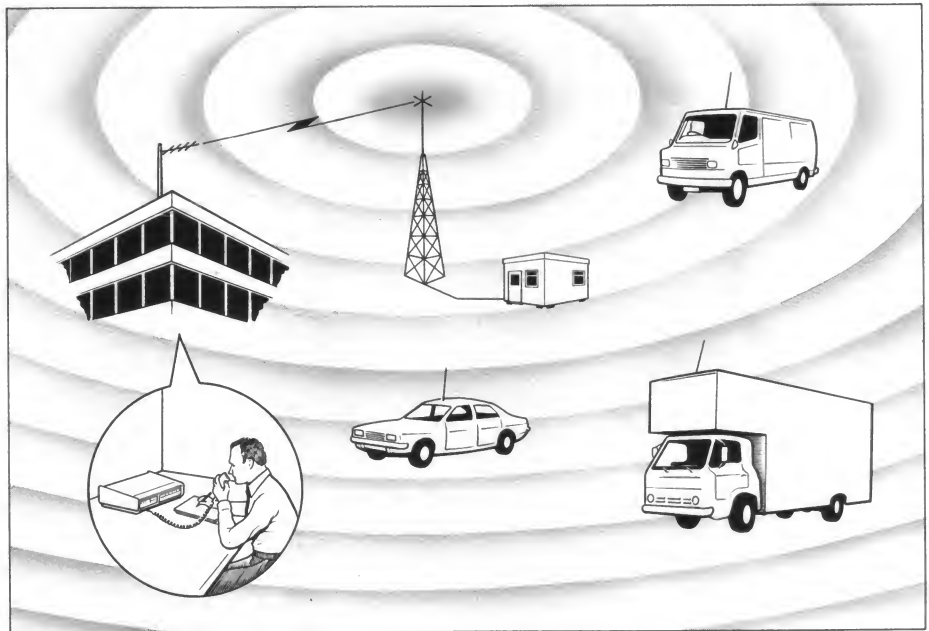
Although all subscribers to a Community Repeater use the same radio channel, each company or firm has its own individual control tone, ensuring undisturbed two-way speech communication between its office and mobile units and also between the mobile units themselves.

Repeater stations, Pye equipped and maintained, are already operating in some areas. More will become available as the demand grows, all based on established Pye sites strategically placed throughout the United Kingdom.

The Community Repeater service brings the undoubted benefits of two-way radio within the reach of an increasing number of users.



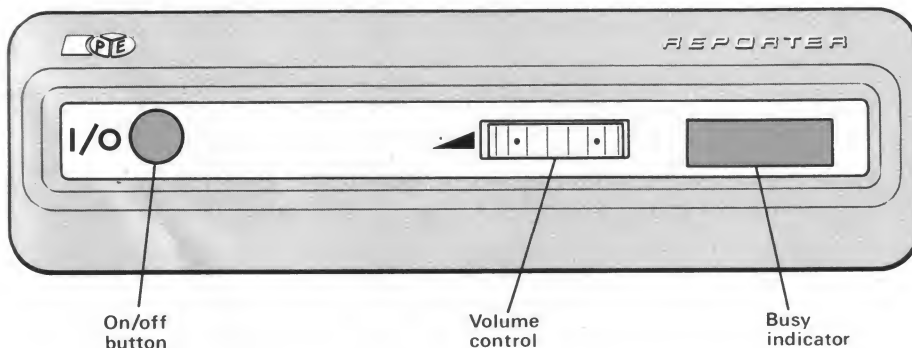
## Typical User



## Try before Buy

Because of the inherent nature of the system, it is a simple matter to arrange a mobile radio test drive for potential users. With the known coverage area, businesses can assess the benefits that the system offers, without obligation.

We are sure you will be impressed . . .



## Simple to Operate

With the absolute minimum of controls, operation of control station or mobile radio is simplicity itself. An indicator lamp tells you when the channel is free for you to press the 'transmit' switch on the hand microphone.



## Lower Operating Costs

Because, in effect, the Community Repeater service enables a number of firms or businesses to share the expense of base station and aerial installation, operating costs are considerably reduced. Also, the radio link from control to repeater eliminates the high costs of the conventional landline link.

The all-in operating cost per vehicle of approximately £1.50 per day, providing virtually unlimited use, easily proves to be fully cost-effective compared to conventional but often less reliable communication methods. (Remember that a 5 minute telephone call up to 35 miles at the peak rate costs 40p, excluding VAT)



## Known Radio Area Coverage



Will a repeater station serve your area of operations? Most repeaters are installed at one of 168 existing Pye sites from which the radio area coverage is already known. In general, the expected range is some 25 to 30 miles radius depending on local topography.

An outline showing the coverage of the Community Repeater in your area is available on request.

## Efficient Aerial Systems

All Pye repeaters are located on tall buildings or on high ground, and are equipped with highly effective aerial systems to ensure not only adequate range but also high quality two-way radio communication throughout the area.

## Quicker Delivery and Installation



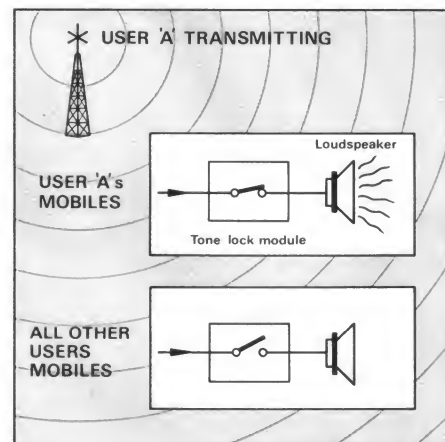
With repeater sites established and operating on radio channels already approved, you can join in the benefits of a Community Repeater service with little delay.

Standard package equipment, using well-proven techniques, for your control station and mobiles means quicker delivery and installation all round. Potential users requiring only a small number of vehicles to be equipped can go 'on the air' quickly and efficiently.

Depending on availability, the equipment offered may differ from that illustrated. The facilities will, however, be as described.



## Operation



Each organisation subscribing to a Community Repeater has its own control tone (Tone Lock), which makes the connection to its own control station and mobiles but locks out other users on the system.

When one organisation is using the radio channel other users hear nothing, their loudspeakers being automatically disconnected. Each organisation hears only its own business.

## Rental/Maintenance

Pye Telecommunications offer very attractive leasing terms for the Community Repeater service. Your control station and mobile equipment can also, if you wish, be covered by a maintenance contract. Our nationwide service network is equipped with the most extensive two-way radio service fleet in Europe.

For more than thirty years, Pye Telecommunications Limited has played a leading role in the development and growth of mobile radio communications, from the earliest, simple two-way radio system to the present day complex of national networks involving every aspect of fixed, mobile and portable equipment.

Europe's largest manufacturer, exporting equipment and systems to more nations throughout the world than any other, Pye design, manufacture, install and maintain systems for every type and size of operational need.

Our new headquarters at Cambridge combines management, engineering and production; shortened lines of communication enable us to accelerate every process, ensuring that Pye equipment not only starts ahead of the field but stays there longer.

With a nationwide network of strategically-placed radio sites, sales offices and service depots, we are especially well-equipped to offer the new Community Repeater Service.

**So Simple, So Cheap, Sounds Good for Business**



*The impressive new headquarters in Cambridge, recently built to meet the ever-increasing demand for Pye Telecommunications' equipment.*



*The Sales and Service Depot at Coventry — one of 24 strategically-placed centres in a network covering the United Kingdom.*

## Community Repeater Locations

Community Repeater installations are currently being planned by Pye Telecommunications throughout the United Kingdom. In view of the extensive list of radio sites operated by the company, you can expect that a Community Repeater will soon be commissioned within your area.

Further details of our future programme for Community Repeater locations are available through our national network of Sales and Service depots. Listed below are a number of major sites currently being developed. We, however, reserve the right to amend plans and priorities to suit the demands of our customers.

**ABERDEEN  
BELFAST  
BIRMINGHAM  
BLETCHLEY  
BRIGHTON  
BRISTOL  
CARDIFF  
CHELTENHAM**

**COVENTRY  
DUNDEE  
EDINBURGH  
EXETER  
FALKIRK  
GLASGOW  
HERTFORD  
HUMBERSIDE**

**IPSWICH  
LEAMINGTON SPA  
LEEDS CENTRAL  
LEEDS SOUTH  
LINCOLN  
LIVERPOOL  
LONDON CENTRAL  
LONDON NORTH**

**LONDON SOUTH  
MANCHESTER  
NEWCASTLE  
NORTHAMPTON  
NOTTINGHAM  
OXFORD  
PETERHEAD  
POOLE**

**PORTSMOUTH  
READING  
SHEFFIELD  
SOUTHAMPTON  
ST. HELENS  
TEESSIDE  
TELFORD**

See your Yellow Pages under 'Radio Communication' for the address and telephone number of the nearest Sales Office of Pye Telecommunications Limited.



**Pye Telecommunications  
Limited**

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Telephone (0223) 61222  
Telex 81166 (PYETEL) G  
Cables Pyetelecom Cambridge

# Pye Automatic Roadside Alarm System



## OPERATES OVER RADIO PATH

— no expensive landlines; independent long-life power supply; simple installation

## SIMPLE TO OPERATE

— universal emergency symbols; audible call confirmation

The Pye Automatic Roadside Alarm System (PARAS) is designed to provide road users with rapid access to emergency facilities. Police, Fire, Ambulance and Breakdown services can be summoned by PARAS, which operates over a radio path thus eliminating the need for a cable system.

The system provides for up to 99 alarm points within the radio coverage area of a single control centre. At the control centre an emergency call is translated into a visual display showing the identification of the alarm point and the nature of the emergency. Optionally, the emergency call can also be

## EXTREME RELIABILITY

— long service without attention; vandal resistant; world-wide application

## VISUAL DISPLAY AT CONTROL

— positive location with clear indication of service required

recorded on a printer. On receipt of the emergency call, the control centre automatically sends an acknowledgement signal to the alarm point to indicate to the caller that his request for an emergency service has been received.

PARAS is designed for reliable operation over a wide range of climatic conditions, making it suitable for use anywhere in the world.

rely on **PE TELECOM**



## ALARM POINTS

The radio signalling unit, complete with its 15V dry battery supply, can be housed in a weatherproof, vandal resistant enclosure. Four separate emergency service calls are catered for. The services (typically, Police, Ambulance, Breakdown and 'All Services') are clearly identified by names and symbols next to operating buttons on the front panel. The unit provides a distinctive note, giving confirmation that the alarm signal has been received at the control centre.

The radio signalling unit uses integrated circuits and silicon semi-conductors throughout to give extremely reliable service without maintenance over long periods under severe climatic conditions. The unit is specially designed for minimum power consumption and uses dry batteries having a life, dependent on usage, of about 1 year. The design employs a plug-in modular construction of printed circuit boards, simple to replace. An internal plug-in key card allows for the quick changing of codes so that all alarm units within one network are basically identical. This further simplifies servicing and the stocking of spares.

The alarm point illustrated is built into a weatherproof, rot-proof fibreglass pole complete with integral antenna.

## CONTROL CENTRE

The visual display, together with associated controls, is mounted in an attractive 'slim line' desk-top unit. This console can also include the control unit of any associated

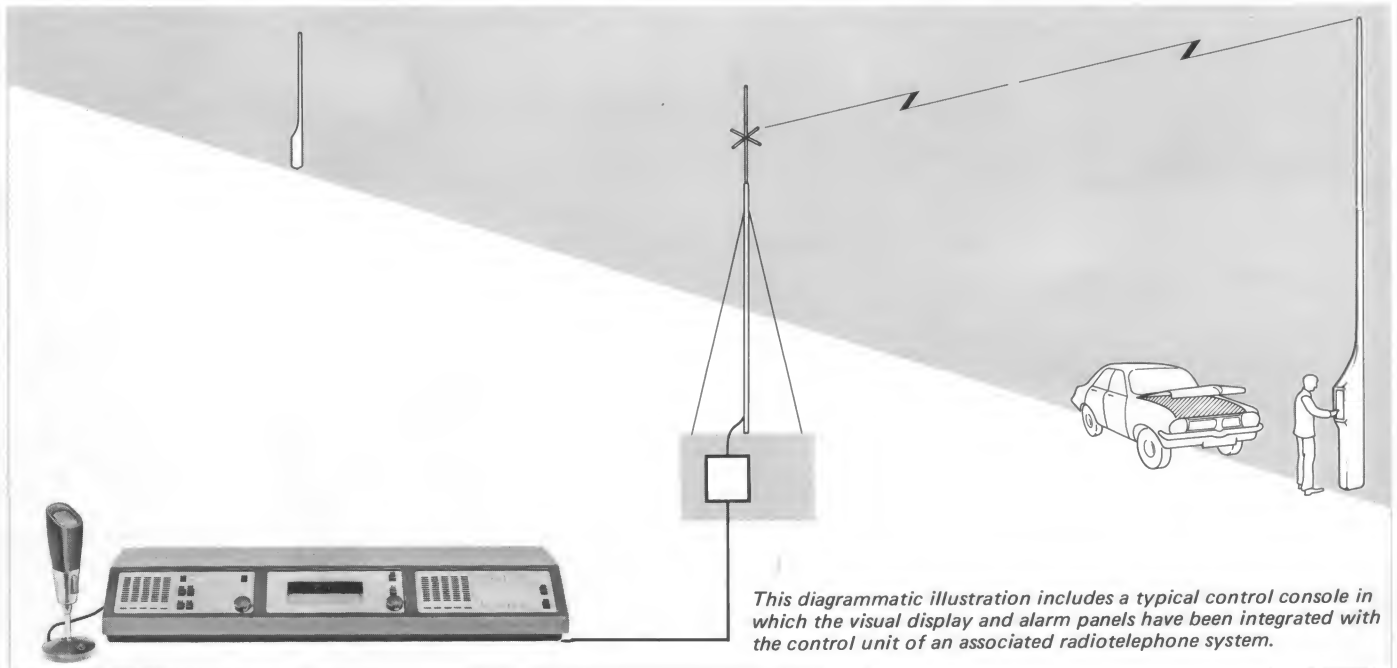
mobile radiotelephone system. Each unit is individually powered for maximum system reliability.

Incoming emergency signals are routed to the identity display unit where the alarm point number is displayed by light emitting diodes. At the same time an audible alarm occurs, synchronised with a flashing light on the adjacent alarm panel which indicates the service required. Operation of a 'defeat' button cancels the alarm tone, the indicator light remaining steady. A further button is provided on the identity unit to reset the display after a call has been dealt with. A brilliance control is also provided for the display tubes, to allow for changes in ambient lighting conditions.

An optional system combination can be employed, where the use of a different tone for each separate area will enable 10 areas, each with a possible 99 alarm points, to share a common radio channel.

Free use of integrated circuits throughout makes the control system intrinsically reliable.

As an option, a printer can record the information together with date and time. If further calls arrive before the operator manually clears the display, the display will 'up-date' and the new information print out. For routine test purposes, a 'print inhibit' button on the alarm panel prevents printing of only the next alarm after its operation.



## Technical Data

### GENERAL

<b>Operation</b>	Intermittent simplex
<b>Operating Speed</b>	Transmission and acknowledgement within 3 sec.
<b>Modulation</b>	Frequency
<b>Frequency Bands</b>	38.6 — 50 MHz
<b>Channel Spacing</b>	25 kHz
<b>CONTROL CONSOLE AND BASE STATION</b>	
<b>Transmitter Power Output</b>	2W nominal
<b>No. of 'Services'</b>	4
<b>Temperature Range</b>	Control console: $-5^{\circ}\text{C}$ to $+55^{\circ}\text{C}$ Base station: $-10^{\circ}\text{C}$ to $+55^{\circ}\text{C}$
<b>Power Supply</b>	100–150V, 190–240V AC; 50–60 Hz

### ALARM POINTS

<b>Transmitter Power Output</b>	2W nominal
<b>No. of 'Services'</b>	4
<b>No. of Alarm Units</b>	99 maximum in any one network. (With area tone option, up to 10 areas can be included, permitting up to 990 alarm units to be used with one radio channel.)
<b>Temperature Range</b>	$-10^{\circ}\text{C}$ to $+60^{\circ}\text{C}$ ambient
<b>Power Supply</b>	15V (nominal) DC from battery cassette of 10 x 1.5V dry cells
<b>Battery Life</b>	1 year approximately at rate of 10 operations per week

*Pye policy is one of continuous improvement, therefore the right is reserved to change specifications without notice.*

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Telephone: Cambridge (0223) 61222

Telex: 81166 (PYETELCOM CAMBG)

Cables: PYETELCOM CAMBRIDGE

# Pye Bantam Portable V.H.F. Radiotelephone

## TYPE HP 1 AM

The Pye Bantam portable v.h.f. equipment is an all-transistor personal radiotelephone, operating in the v.h.f. band from 25-174 Mc/s. It meets the British Post Office specification No. W6345 for a.m. portable equipment.

The Bantam is available for channel spacings of 25 to 30 kc/s and 40 to 60 kc/s. Up to three switch selected channels may be provided in standard equipment. A fully noise-compensated squelch is included as standard and an efficient peak noise limiter is also incorporated. The transmitter and receiver are both assembled on one printed circuit which is fully accessible for servicing when the case is removed.

With an r.f. output of approximately  $\frac{1}{2}$  watt, the Bantam can achieve reliable communication with a base station up to 15 miles distant or 2-3 miles between two Bantams, depending on terrain and frequency. The built-in loud-speaker may be switched in or out of circuit as required. When the speaker is switched off the weatherproof hand microphone serves as a transmitter microphone and receiving earphone.

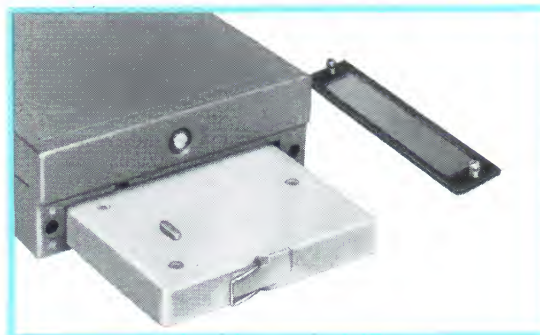
The Bantam is extremely compact and weighs less than  $4\frac{3}{4}$  lb. complete with batteries. The set can be operated in its leather carrying case which may be slung from the shoulder.

The Bantam will operate from either heavy duty torch cells or rechargeable batteries. It is normally supplied with a cassette for torch cells and the rechargeable nickel cadmium battery is available as an optional extra.

A constant current charger, type BC1 is available and is recommended for use with the nickel cadmium storage battery. The charger operates from the a.c. supply and will charge up to three batteries simultaneously.

## FEATURES

- Fully transistorised transmitter and receiver
- Very high performance receiver
- Crystal filter selectivity
- $\frac{1}{2}$  watt transmitter output
- 250mW audio power
- Long endurance with rechargeable or dry batteries
- Can be used with external antenna to give greater range
- Weatherproof



## GENERAL

<b>Service</b>	A3 telephony. Single or two-frequency simplex.
<b>Frequency Range</b>	25–174 Mc/s
<b>Channel Spacing</b>	25 to 30 kc/s or 40 to 60 kc/s
<b>Antennas</b>	A 50 ohm coaxial socket is provided in addition to the built-in telescopic antenna and the flexible wire antenna carried in the leather shoulder strap.
<b>Power Supply and Endurance</b>	<p><b>Nickel cadmium storage battery</b>            For Tx/Rx ratio 1 : 10 20 hours            For Tx/Rx ratio 1 : 50 36 hours.</p> <p><b>U7 cells in cassette</b>            For Tx/Rx ratio 1 : 10 5 hours continuous            For Tx/Rx ratio 1 : 50 9 hours continuous            Increase by 30% when used for not more than three hours per day.            Increase by 50% when used for not more than one hour per day.</p> <p><b>Mercury cells in cassette</b>            For Tx/Rx ratio 1 : 10 20 hours            For Tx/Rx ratio 1 : 50 36 hours.</p>
<b>Controls</b>	<p>OFF-ON with loudspeaker — ON without loudspeaker</p> <p>Note: The microphone is connected as an earphone when the loudspeaker is disconnected.</p> <p>Volume Control            Squelch Control            Channel Switch            Press-to-transmit button on microphone.</p>
<b>Dimensions</b>	<p>(Over Controls) 9 in. high, <math>5\frac{1}{2}</math> in. wide, <math>2\frac{1}{8}</math> in. deep (22.9 × 14.0 × 5.25 cm).            (In carrying case) <math>9\frac{3}{4}</math> in. high, <math>5\frac{3}{4}</math> in. wide, <math>2\frac{5}{16}</math> in. deep (24.7 × 14.6 × 5.92 cm).</p>
<b>Weight</b>	<p>Less carrying case, batteries and microphone 2 lb 14 oz (1.31 kg)            Complete (with nickel cadmium storage battery) 4 lb 13½ oz (2.2 kg)            Complete (with U7 dry cells) 4 lb 3½ oz (1.9 kg)</p>

## RECEIVER

<b>Sensitivity</b>	0.8µV for 10dB signal-to-noise ratio
<b>Audio Output</b>	250mW at less than 10% distortion
<b>Spurious Responses</b>	At least 60dB down
<b>Selectivity</b>	60dB.

## TRANSMITTER

<b>Power Output</b>	Approximately ½ watt.
<b>Modulation</b>	Maximum 90%

*Specification details subject to change without notice.*

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